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The State of



Wyoming

• 1905 •



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EXECUTIVE DEPARTMENT.

(the first Monday in January, 1907.)

.....Governor.....Cheyenne
.....Private Secretary.....Cheyenne
.....Secretary of State.....Cheyenne
.....Deputy Secretary.....Cheyenne
.....State Treasurer.....Cheyenne
.....Deputy State Treasurer.....Cheyenne
.....State Auditor.....Cheyenne
.....Deputy State Auditor.....Cheyenne
.....Supt. Public Instruction.....Cheyenne
.....Deputy Superintendent.....Cheyenne

CONGRESSIONAL.

Senator...Term expires Mch. 4, '07...Cheyenne
Senator...Term expires Mch. 4, '11...Evanston
Representative...Term expires Mch. 4, '07...Newcastle

JUDICIAL DEPARTMENT.

SUPREME COURT, CHEYENNE.

Justice...Term expires first Monday in Jan., 1911
.....Term expires first Monday in Jan., 1913
Justice...Term expires first Monday in Jan., 1907
Ct....Appointive. At pleasure of the Court

DISTRICT JUDGES.

District. Term Expires. Postoffice.
t...First Monday in January, '09...Cheyenne
nd...First Monday in January, '09...Laramie
rd...First Monday in January, '11...Rawlins
rth...First Monday in January, '11...Buffalo

BOARD OF LAW EXAMINERS.

Postoffice.
.....Cheyenne
etary.....Cheyenne

.....Rawlins
.....Laramie
.....Sundance

135



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STATE CAPITOL AT CHEYENNE.

THE STATE OF WYOMING

A Book of Reliable Information Published by Authority of the Eighth Legislature

EDITED AND PUBLISHED UNDER THE DIRECTION OF
BRYANT B. BROOKS,
GOVERNOR

*Simply a rearranged copy of
Chatterton's book for 1904.*

1905

SHERIDAN, WYOMING:
SHERIDAN POST COMPANY, PRINTERS.
1905

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PREFACE

In the preparation of this work upon the resources and possibilities of Wyoming, the editors have made no effort at high-sounding rhetoric or beautiful diction, simply contenting themselves with presenting, in a plain, straight-forward manner, such facts as they have been able to gather relative to the great agricultural and mineral possibilities of a state which has within its borders more undeveloped virgin soil than any other state in the Union.

A special effort has been made to give succinct information relative to the gigantic irrigation projects already taken up under the reclamation service of the United States Geological Survey, the vast enterprises under the Carey act, the big private irrigation enterprises, the agriculture of the state, the live stock industry, the geology in detail, and some of the openings for the investment of capital, as well as brief mention of the political, educational and social conditions that exist.

To gather this information, it has been found necessary to call upon many of our prominent men for material. Wherever possible, proper credit has been given. To all those who have assisted in the work, thanks are returned. For other reward, they must look to an appreciative commonwealth.

J. C. Hart

Wyoming at a Glance.

Area, 97,890 square miles.

Mean temperature, 44 degrees.

Wool clip for 1905 worth \$6,000,000.

Peerless in its educational facilities.

Area of coal land, 20,000 square miles.

Cattle in 1905, 700,000, worth \$14,000,000.

Highest grade of soft coal known to man.

Finest trout fishing known to mortal man.

Mean elevation, 6,000 feet above sea level.

Area covered with timber, 10,000,000 acres.

Population (estimated), July 1, 1905, 120,000.

Tons of stream tin have been mined and sold.

Lofty mountains, rolling plains, vast plateaus.

Iron, copper and coal enough for a vast empire.

Five million head of sheep, valued at \$17,500,000.

Finest natural plaster on earth, manufactured at Laramie.

Area subject to irrigation and cultivation, 10,000,000 acres.

Father of modern irrigation law and the reclamation act.

Foremost in the application of the Carey desert land act.

Hundreds of miles of railroad construction laid out for 1905.

Nutritious grasses, furnishing abundance of feed for live stock.

Bank deposits in Wyoming, November 10, 1904, \$8,846,-135.44.

Amount received from rental of state lands, 1904, \$178,-829.48.

Thirteen counties, four judicial districts, four irrigation districts.

One hundred cars per day of iron ore shipped from Sunrise to Pueblo.

Natural gas in commercial quantities discovered southwest of Douglas.

Average interest rate in Wyoming, about 8 per cent, indicating good business conditions and a strong demand for

money. Gilt-edged security, of course, brings money at a lower rate.

In round numbers, the life insurance policies aggregate \$5,000,000.

Great opportunities for making money in sheep, cattle and horses.

Greatest wonderland of the world, the Yellowstone National Park.

All the materials necessary for the manufacture of the finest glass.

Coal mines are being operated in all the counties of the state, save one.

Area subject to entry under the land laws of the United States, 48,000,000.

The property of Wyoming is insured against fire to the extent of \$7,000,000.

Most famous rendezvouses in the world for large game; the hunter's paradise.

Source of the Columbia, the Missouri, the Colorado, the Rio Grande and the Platte.

One million acres of land now being reclaimed under government and private enterprises.

Vast iron deposits, second to no state in the Union, cheaply mined and high in value.

Finest hot springs on earth, equal to Carlsbad in mineral properties, located at Thermopolis and Saratoga.

All the mountain ranges contain gold and silver deposits, awaiting the hand of the prospector and the miner.

Resources practically undeveloped. Greatest field on the continent for moneyed men to get in on the ground floor.

Sulphur, asbestos and plumbago are among the minerals discovered in quantities considered commercially valuable.

Grand opportunity for making money in the fattening of lambs upon field peas and alfalfa raised upon Wyoming soil.

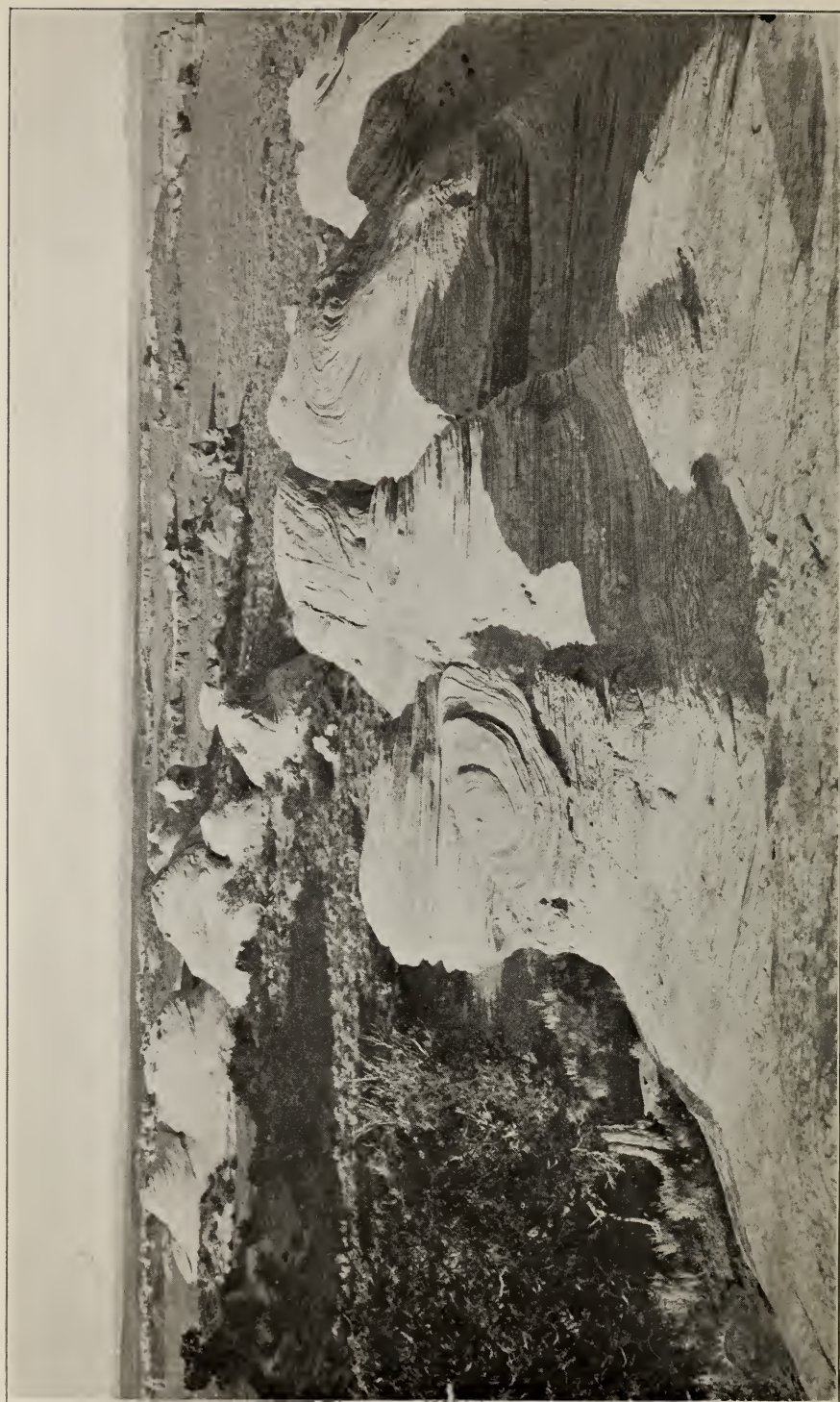
The rate of taxation throughout the state has decreased in the aggregate during the past ten years two mills on the dollar.

Semi-anthracite coal has been discovered in Johnson County, and coking coal has been discovered in two or three localities, notably at Newcastle.

County bonds have sold as low as 4 per cent; school district bonds, 4½ per cent, and municipal bonds at the same price, showing in the most conclusive manner that the credit of the state is very high.



THE GRAND TETONS.



THE STATE.

Wyoming enjoys the unique distinction of having been under more rulers and more kinds of government than any other state in the entire Union. According to Dr. Grace Raymond Hebard's excellent work on "The Government of Wyoming," it has been under Ferdinand and Isabella, Charles I., Philip II., Philip III., Philip IV., Charles II., Philip V., Ferdinand IV., Charles III., Charles IV., Ferdinand VII. and Joseph Bonaparte of Spain; Francis I., Henry II., Francis II., Charles IX., Henry III., Henry IV., Louis XIII., Louis XIV., Louis XV., Louis XVI., the Republic and the Consulate of France, and Louisiana, Missouri, Texas, Oregon, Utah, Nebraska, Washington, Dakota, Idaho and Wyoming of America. It is the only state that contains lands obtained from all four of our principal annexations which form the territory west of the Mississippi River.

The state takes its name from the wonderful Wyoming Valley, in Pennsylvania, and is supposed to be a corruption of the Indian name "Maughwauwame," meaning large plains.

Wyoming was organized as a territory July 25, 1868, from what was then the southwestern portion of Dakota, northeastern part of Utah, and eastern part of Idaho. July 10, 1890, the territory was admitted as a state by act of Congress, being the forty-fourth state in order of admission.

Its geographical location classes it among the states of the inter-mountain or arid region, being bounded on the north by Montana, on the east by Dakota and Nebraska, on the south by Colorado and Utah, and on the west by Utah, Idaho and Montana. Its length from east to west is 355 miles; width from north to south, 276 miles. Its area is 97,890 square miles, or 62,645,120 acres.

The region now comprised within the limits of the state was traversed by Canadian explorers and other venturesome persons at an early date, but the first white settlement appears to have been established at Fort Laramie, in the eastern part of the state, in the year 1834. Subsequently trading posts were established in other localities, and still later the building of the Union Pacific railroad and the adaptation of the western country to the cattle business led to further settlement.

In general appearance the country is mountainous, with valleys, rolling plains and plateaus, the latter covered with grasses of great nutrition and furnishing admirable pasture for

live stock, while the mean elevation is 6,000 feet above sea level, with extremes ranging from 3,000 to 14,000 feet. Probably 10,000,000 acres of the total area of the state are covered with timber.

Flowing east or west, according as their source is on the eastern or western slope of the main range of the Rocky Mountains, which cross the state from north to south, are numerous streams, among the number being the North Platte, Snake River, Green River, the Big Horn, the Shoshone, the Laramie and the Yellowstone. None of these streams are navigable in a commercial sense, but they furnish water for the irrigation and development of the surrounding country, and in some instances are used for the transportation of timber.

The soil is a light, sandy loam; dark and rich in the valleys. When reclaimed by the application of water, bountiful returns of agricultural products, with the exception of such as thrive only at low altitude and in warm, damp climates, are secured. It is estimated that 10,000,000 acres of the area of the state are suitable for agricultural purposes by irrigation.

There are thirteen counties, four judicial districts, four irrigation divisions and many school districts. The capital is located at Cheyenne, in the southeastern corner of the state.

The climate is similar to that of the mountain region of Italy, and is not, as sometimes erroneously supposed, extraordinarily severe in the winter. The average mean temperature for the year is about 44 degrees, varying somewhat according to elevation, and the atmosphere is rarefied and pure, with but few cloudy days. Winds sometimes prevail during the spring and fall, but cyclones and tornadoes are unknown, while the dryness of the atmosphere tends to ameliorate the effects of extreme cold. Snow storms are usually followed by chinook winds, which serve to uncover the pastures, so that live stock get the benefit of the grasses cured by the summer sun, and as the cured native grasses retain their nutrition, it enables the stockman to support his stock upon the open range with little, and in the case of sheep raising, no additional food. Western blizzards have been largely exaggerated, and some people consider the mountain climate synonymous with constant storms, dangerous to life. Nothing could be farther from the truth. But few climates are more bracing, healthful or pleasant than the climate of the mountain region of the western states. The almost constant sunlight is not only pleasant, but beneficial from a sanitary standpoint, and it is a well recognized fact in the medical profession that certain diseases, notably pulmonary affections, are much benefited

by change from the states of lower altitudes to Wyoming or adjacent states. (See article on Climate.)

Gold, copper and coal mining, petroleum production and raising live stock are the most important business interests of the state. (See articles on these resources.) As will be noticed elsewhere in this publication, the supply of coal underlying the state is apparently inexhaustible, and constant employment is furnished to a great many miners.

The raising of live stock in its departments, however, probably now claims the attention of more people than any other industry, and the facilities for prosecuting that business are such as to commend it to the attention of prospective settlers. It is a noticeable feature of the present condition of the state that many of the former large herds of cattle have, in recent years, been reduced, without, however, materially reducing the total number of cattle in the state, while the number of small herds owned by ranchmen and farmers has largely increased, and it is doubtful if any other state can show an agricultural population whose financial condition averages better than that of Wyoming's ranchmen. Many are here to testify to the benefits and profits derived by them from the use of the free pasture lands of the open range, with its nutritious native grasses, the opportunities of acquiring government land, cheap fuel and healthy climate, and the large area of the state in proportion to the present population is sufficient evidence that opportunities by which others have heretofore profited are still offered to the prospective settler.

The state is destined in the very near future to become the richest, in its diversified natural resources, of any in the Union. The minerals listed in another part of this pamphlet are here in quantity. There are vast coal fields as yet unopened and subject to entry under the United States statutes. There is an enormous area of oil land, most of which is still open for location. There are mountains of iron ore; there is probably more copper than in any other state—veins from four to twenty-five feet wide, running from 15 per cent to 70 per cent—and many rich gold bearing lodes.

Hot springs abound, which not only equal but surpass the famous Carlsbad Springs of Europe. The analysis of the waters and the results of their use have demonstrated this to be true.

The only thing necessary to make the state all and more than is claimed for it in this pamphlet is more transportation facilities—railroads operated in the interest of local development and not solely for trans-continental traffic—more capital invested on a business basis, and more men of brains, push and honest purpose. To such fortune stands upon the Con-

tinental Divide, with winning smile and outstretched arms; to such Wyoming extends a hearty greeting and a co-operative hand.

COUNTIES	Population, Census 1900	No. electors voting, 1900	Percentage population to votes, 1900	No. electors voting, 1902	Estimated population, 1902	No. electors voting, 1904	Estimated population, 1904
Albany	13,084	2,558	5.115	2,386	12,214	2,676	13,687
Big Horn	4,328	1,368	3.163	1,789	5,687	2,860	9,046
Carbon	9,589	3,038	3.167	3,027	9,586	3,400	10,767
Converse	3,337	1,228	2.717	1,283	3,492	1,570	4,265
Crook	3,137	1,271	2.590	1,350	3,496	1,581	4,094
Fremont	5,357	1,538	3.505	1,536	5,383	1,700	5,958
Johnson	2,361	937	2.519	1,050	2,644	1,247	3,141
Laramie	20,181	3,821	5.281	3,643	19,238	4,644	24,525
Natrona	1,785	812	2.198	1,006	2,211	1,120	2,462
Sheridan	5,122	2,095	2.444	2,145	5,242	3,286	8,031
Sweetwater	8,455	1,948	4.340	2,020	8,767	2,184	9,478
Uinta	12,223	3,832	3.189	4,031	12,855	4,543	14,488
Weston	3,203	923	3.470	857	2,973	1,086	3,768
	*92,162	25,459	.....	26,138	93,788	31,897	113,710

*Not including Yellowstone Park.

Albany County

Albany County was named by a representative from the then unnamed county to the Dakota Legislature, who, being a former resident of Albany, New York, named the new county Albany. It has an area of 3,248,640 acres; of this, 1,077,754 acres are listed for taxation. Total valuation of county, \$4,360,099.86; total tax levy, including state levy, 20 mills; bonded indebtedness, \$112,000; mean elevation, 6,500 feet.

Agriculture.—Twenty-five years ago those who suggested that agricultural products might be raised with profit in Albany County were ridiculed. Today hundreds of citizens are not only making a living, but are reaping large profits. The soil of the Laramie plains is suitable and the season at an elevation of 7,000 feet is sufficiently long for all kinds of small grain, alfalfa (two crops), nearly all the vegetables, sugar beets, etc. A ready market is found for all kinds of farm produce at prices far in advance of those prevailing in Kansas and Nebraska.

Recent experiments on a somewhat extended scale have proved the value of the field pea, and quite an acreage is being planted during the current season (1905). This crop is used

in the fattening of lambs, for which purpose it takes the place of both corn and alfalfa and is much cheaper.

Stock Raising is still the principal industry, more than \$2,000,000 being invested in domestic animals. The days of the large outfits have passed, but the business has not declined in consequence and is far more profitable. Under existing conditions, the ranchmen of Albany County keep just the number of animals that can be well cared for in the winter time, making it a universal rule to provide sufficient hay to carry them through in good condition. A constant evolution from the large to the small ranch is in progress, and in the near future all the large holdings will doubtless be divided into small, well equipped farms and ranches. Land owners are rapidly learning that it is more profitable to bring their lands under cultivation than to hold them solely for range purposes.

The City of Laramie is the county seat and principal town. Its population, census of 1900, is 8,207. Here is located the University of Wyoming; the public school system is of the very best. Among the manufacturing cities of the state, Laramie takes first place. Just to the south of the city, and within its limits, is located the factory of the Acme Cement Company. It owns about 1,000 acres of plaster land, which has a deposit of natural plaster from six to eight feet in thickness. It is put through a calcining process and becomes the finest of building material. It is used throughout the west, the output of the plant being from six to ten car loads per day. Another plaster mill, belonging to the Rocky Mountain Plaster Company, is located nine miles south, at Red Buttes station. Its product is made from gypsum, and it is what is known as a hard-rock mill. Very fine plaster of paris and four other grades of plaster are manufactured here. The two plaster concerns employ about fifty men.

At Laramie the Union Pacific operates large shops and a tie-preserving plant. The ties are brought here from the mountains and undergo a pickling process which prolongs their life perhaps two and one-half times. In the shops and at the tie plant 150 men are employed. It is a freight division on the Union Pacific, and many railroad men have their homes established at this point.

Lumber is manufactured in the adjacent mountains, and an excellent quality of brick is made in the city. A pressed brick plant is in operation. Building material and labor are more reasonable than in most western cities, hence buildings for homes and business purposes can be constructed at fair rates.

A large quantity of limestone is shipped to the beet sugar plants and smelters of Colorado from quarries just to the east of Laramie. The Union Pacific has constructed a spur to these quarries. This limestone is the purest discovered in the United States and is practically inexhaustible. It was used some years ago in the manufacture of glass. All the other ingredients for the manufacture of glass of a superior quality are found at Laramie, and it is within the realm of reason to predict that this industry will soon be in a flourishing condition at this point. Enough has been done to demonstrate its feasibility.

The State Fish Hatchery is located five miles southeast of Laramie. At this institution more than a million small fry are hatched annually and distributed among the streams of the state. With two exceptions, the streams of Albany County were naturally without trout, hence the State Hatchery has been of untold value to the local angler, as well as to those who enjoy the delicacy of trout upon their tables. No better trout fishing is enjoyed by the people of any section than is had by the people of Albany County.

Fruit Growing.—Many of the residents of Albany County are successfully raising small fruit, such as raspberries, currants, gooseberries, strawberries, etc., and some attempts have been made at raising apples and other large fruits. One ranchman, Mr. Jacob Lund, has for several years raised a quantity of Wealthy apples at his ranch near Jelm, elevation 7,400 feet. There is no reason to believe that fruit in almost endless variety cannot be raised in portions of Albany County; in fact, results already attained prove that it may be done.

Mining.—See Mineral Resources, this pamphlet.

In conclusion, it may be said that Albany County holds out to the man of small fortune much that is alluring. Here is an opportunity to make a comfortable home in a country that is prosperous and in a climate that is unsurpassed in all that pertains to the health of mankind.

Albany County is in the Cheyenne United States land office district.

Big Horn County

Big Horn County was named from the Big Horn or Rocky Mountain sheep, which abound in the Big Horn Mountains, on the east side of the Big Horn Basin. The county was organized in 1896. Bonded indebtedness is \$34,000; tax levy, 18½ mills; total assessed valuation, \$3,005,256; average elevation of agricultural portion, 4,000 feet.

It was the last organized county of the state, and consists of that portion of the northwestern corner known as the Big Horn Basin. This is, in many respects, one of the most remarkable basins situated on either side of the great Continental Divide. This is true, whether we consider its great area, the lofty mountains enclosing it on all sides except the north, its equable climate or the fertility of its soils. On the east looms up the Big Horn Range, some of its peaks rising 12,000 feet above sea level; on the west tower the equally high peaks of the Shoshone Range, spurs of the great Continental Divide; on the south is the Owl Range, a spur of the Continental Divide connecting it with the southern end of the Big Horn Range. The usual elevation of the divides connecting these peaks is from 9,000 to 10,000 feet above the sea level. Among these mountains are found some of the finest examples of mountain and canon scenery to be found on this continent.

Passing centrally through this basin in a northerly direction, its meanderings covering more than one hundred miles, is the Big Horn River. Its entrance into the basin has been made in some past convulsion of nature, through the Owl Range, by an impassable canon of about four miles in length. Its exit from the basin to the north has been made by cutting through the northerly end of the Big Horn Range by a very remarkable canon of about twenty miles in length, its walls rising almost vertically 1,200 to 1,500 feet above the water. Intermediate between these canons this river passes through Sheep Mountain, a secondary and detached range, by a canon of about three miles length, but equally as interesting as the other two. The Big Horn Range, west of its lower canon, is designated Pryor Mountain, which gradually recedes in height until it drops to the level of the plain bordering Clark's Fork of the Yellowstone. Around the base of this mountain is the natural outlet from the Big Horn Basin.

Agriculture and Stock Raising.—It is within bounds to assert that every square mile of the area of this county, except a small percentage forming the slopes of the high mountain peaks, can be utilized in summer or winter for agriculture or the grazing of stock, as proven by the experience of ten years with cattle, horses and sheep. The high mountain plateaus, with their intervening valleys, up to an elevation of 10,500 feet, in summer and until covered with snow in the fall, produce grass of sufficient fattening properties for summer feed. At elevations of from 7,500 to 10,500 feet all stock keep fat for four months of the year.

Agriculture.—The greater part of the irrigable lands have an altitude varying from 3,400 feet to 4,400 feet. Oats yield

from forty to eighty bushels per acre, wheat thirty to sixty, rye twenty-five to fifty-five, barley forty to sixty, corn thirty to fifty, and is as sure a crop as in Iowa; alfalfa three to seven tons, other grasses two to four tons per acre.

In this county the state, under the Carey Arid Land Act, has segregated 400,000 acres of land, which will shortly be placed under irrigating ditches, and which will provide homes for thousands of people. (See article.)

There is no better location in the west than this section for a beet sugar factory.

Within the belt lying between 5,500 and 6,500 feet elevation timothy and redtop do exceptionally well; alfalfa produces two cuttings. Below this belt, with ordinary good management, alfalfa will yield three good cuttings. Its seed comes to full maturity and is of good quality. It is believed that in no locality of the world are small grains of superior quality or in larger yield per acre. All the roots, such as potatoes, carrots, rutabagas and beets of all kinds, thrive excellently well up to 6,500 feet elevation. It is not uncommon for beets and rutabagas, where well cultivated, to attain weights of ten to fifteen pounds, and solid to the core. Of melons, the cantaleup matures of excellent quality; so does the watermelon, though to less extent. The potato is a large yielder, and of quality unsurpassed anywhere. Such garden vegetables as radishes, lettuce, cauliflower, beans and peas do well at all altitudes. Radishes, lettuce and cauliflower come to perfection above 5,500 feet altitude and are of unsurpassed quality and flavor.

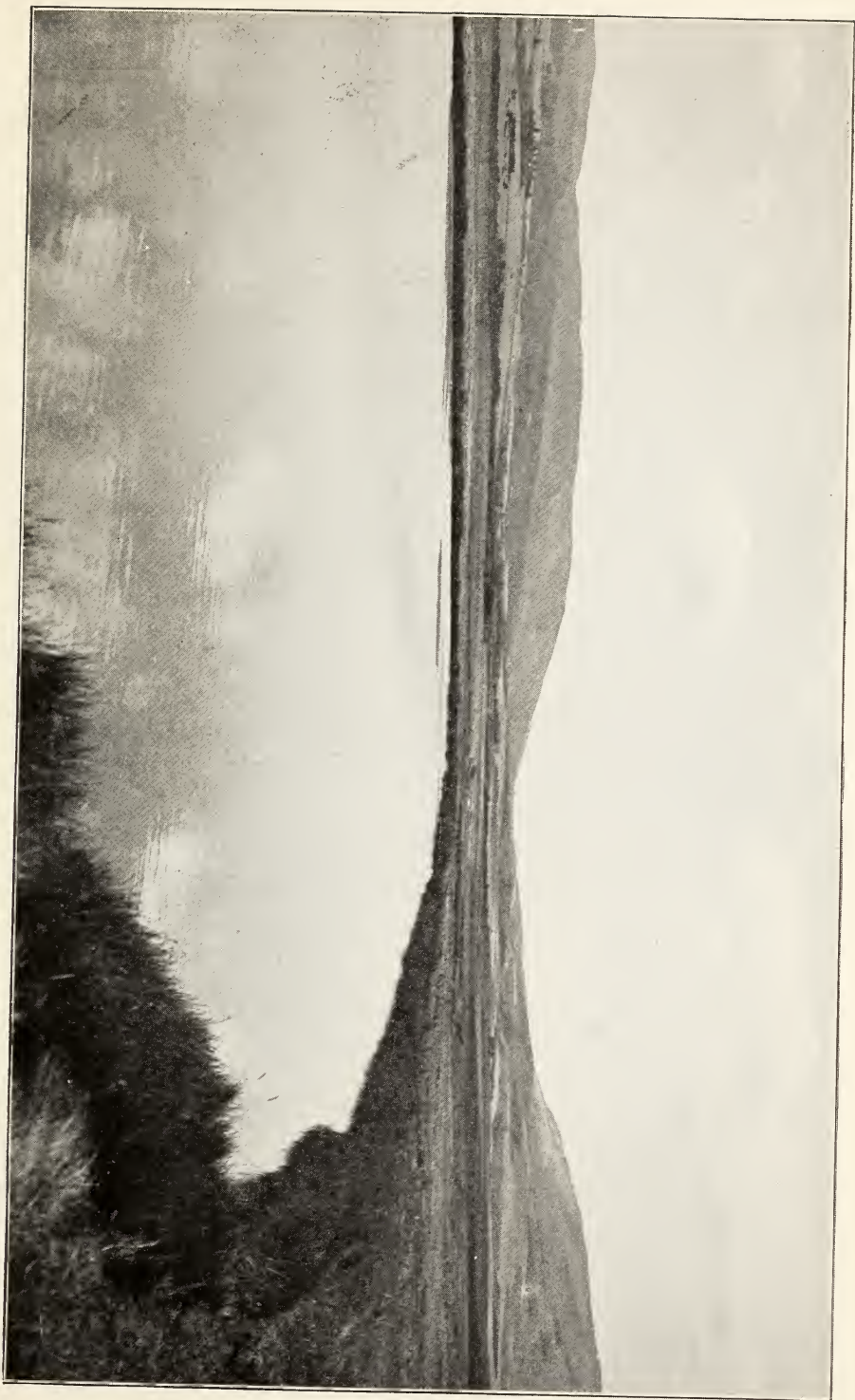
Horticulture.—All the small fruits, such as raspberries, currants, strawberries and gooseberries, grow wild, and tame varieties do well. Apple and peach trees of two years' growth promise success.

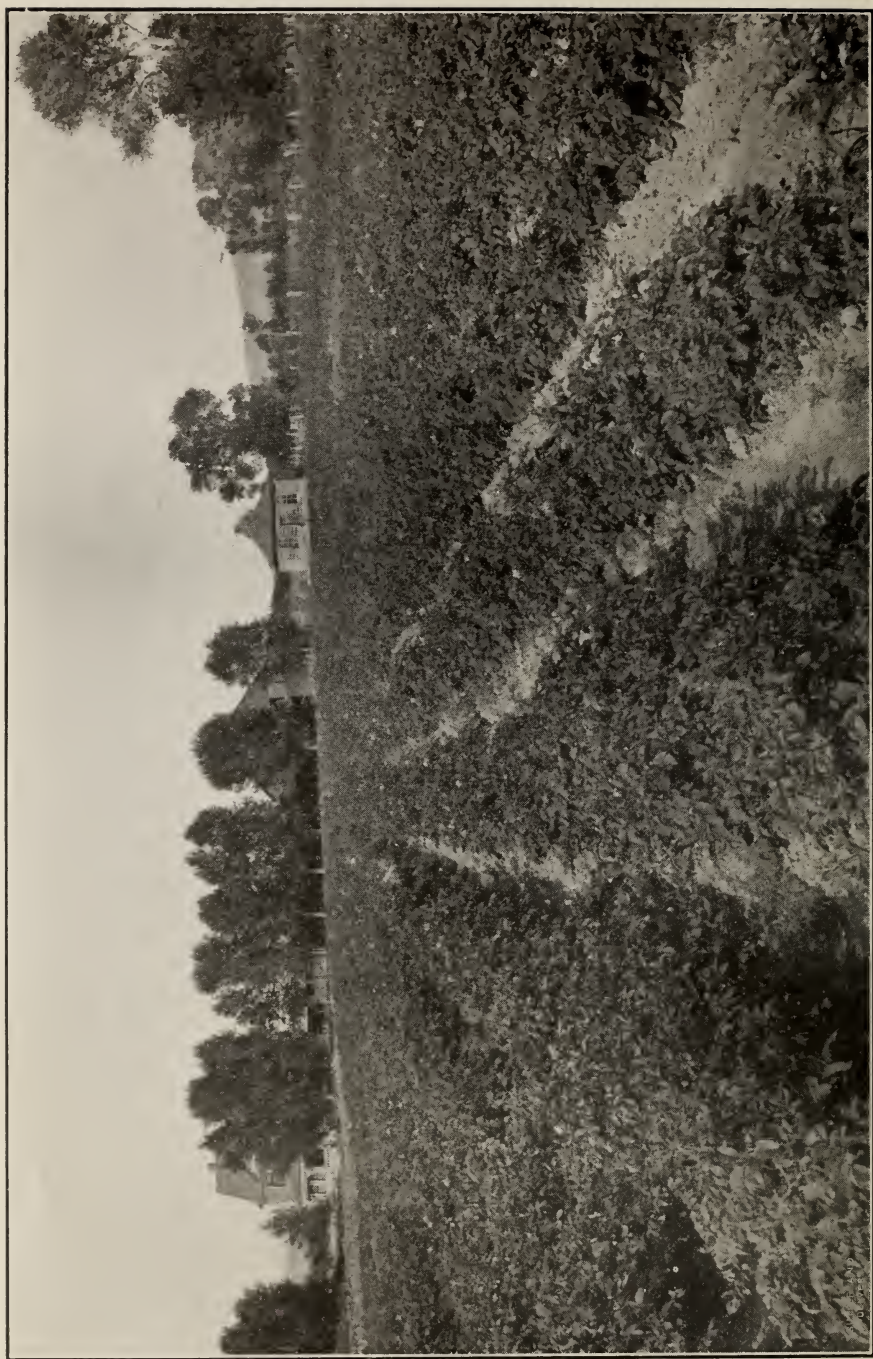
Irrigation.—In addition to the large volume of water delivered by the Big Horn River, running centrally through the county, its large and numerous tributaries furnish a superabundance of water for irrigating large bodies of land that can be gotten under ditch. From the east flow Kirby, No Wood and Shell Creeks; from the west comes Owl Creek and its much larger tributaries of Grey Bull and Wood River; then the two forks of the Shoshone River, and still farther to the north the Clark's Fork of the Yellowstone.

More extended reference to minerals, agriculture, stock raising, climate, hot springs, etc., will be found elsewhere in the articles upon Geology, Agriculture, Climate and Health, and Stock Raising.

In this county are situated the cities of Cody, Meeteetse, Garland, Basin, Byron, Cowley, Lovell, Burlington, Germania, Otto and Bonanza. At Bonanza there has recently been dis-

A SCENE IN SAND CREEK VALLEY.







LOADING TREES AT FORT STEELE, WYOMING.



VIEW OF SARATOGA, WYOMING.

covered lubricating and illuminating oil, and it promises to develop into a very rich oil district. There are business opportunities in all of these towns.

From Cody tally-ho stages run to Mammoth Hot Springs, in the Yellowstone National Park, a distance of fifty miles, through scenery which is not equaled in the Alps. (See article, this pamphlet, entitled "Yellowstone National Park.")

Big Horn Hot Springs.—These springs were ceded to the state in 1897, together with ten miles square of land from the Shoshone Indian Reservation, and are located on the Big Horn River, just opposite Thermopolis, about fifty-four miles in a northerly direction from the center of the state. The main spring is on the east side of the river, about 500 feet back from the bank of the stream, and comes to the surface at the foot of Monument Hill, which rises about 250 feet above the spring. The surface of the spring is about forty-five feet above the river. The stream running from the spring to the river is about seven feet wide and two and seven-tenths feet deep, and carries about 18,600,000 gallons of water every twenty-four hours. The temperature of the spring is 135° F. The spring is situated on the east side of a slightly sloping plateau, which contains about ten acres of land, which is covered by a heavy coating of alkaline salts and sodium, which have been deposited by the hot mineral waters spreading over the surface. This coating is from ten to forty feet thick, and is naturally of a pure white color. There are many terraces on the edge of the formation, making a very picturesque appearance. There are many traces of volcanic action to be seen surrounding the springs and formation on the east, north and west sides. These springs equal, in every respect, the famous European springs of Carlsbad and Aix-la-Chapelle, or the Arkansas springs, and are equal in curative properties to the Saratoga Hot Springs.

The United States land office for this county is at Lander, except for a few townships in the eastern part of the county, which are in the Buffalo land office district.

Carbon County

Carbon County was organized in 1870 and was named from the immense coal deposits which underlie the county. It has an area of 11,061 square miles, is noted for its vast herds of sheep, its fine cattle and, above all, its rich coal and mineral deposits. It is the richest county in mineral resources and

stands second to none in its stock raising. The total number of acres listed for taxation is 1,218,353, and the valuation of all real estate in the county, including town lots, is \$2,409,217.50; bonded indebtedness, \$129,200; tax levy, 18 mills; the total value of assessable property in the county, \$5,569,094.33.

Rawlins is on the Union Pacific railroad, and is the county seat of Carbon County. Altitude, about 7,000 feet. It has a population of about 2,500; has roundhouses and extensive machine shops. It is a distributing point for an outlying country, both north and south of the railroad. Daily and tri-weekly stages leave here for points north and south. The new State Penitentiary, costing \$100,000, is located here, and also a substantial stone court house and a fine public school building, which cost, respectively, \$50,000 and \$35,000. Here are located and operated fine building stone quarries, the Rawlins sandstone being shipped out of the state both east and west. The beautiful new government building at Cheyenne was built of this stone, as was the State Capitol. Here also are located the great mineral red paint mines (known as Rawlins Red), from which the paint for the Brooklyn bridge was originally procured. This ore is shipped to Denver and much used by the smelters as a flux. The city is also the supply point for and the headquarters of a vast sheep and wool industry.

Saratoga, a beautiful town of 1,000 inhabitants, is situated twenty-three miles south of the Union Pacific railroad, in the heart of the great Platte Valley, and is the gateway to the renowned Grand Encampment mining district, and is noted for its medicinal hot springs. The temperature of the water is 135° Fahrenheit. From their chemical analysis, we would say that these springs were alkaline-sulphur, in combination with salines and calcareous salts. They closely resemble in their different properties the famous European springs of Carlsbad, Marienbad, Ems, Teplitz and Aix-la-Chapelle.

Their properties may be summed up as stimulating, absorptive, alterative and reconstructive, and clinical results have proven all the claims made for them by their chemical analysis. It is difficult to state what diseases are most benefited by a course of baths at these thermal waters. Among the list of those maladies which have been relieved at the springs may be mentioned all as acute, sub-acute and chronic diseases of all mucus membranes, such as catarrh of the nasal passages, the mouth and pharynx, the throat, bronchial tubes, the stomach and the whole alimentary canal; dyspepsia, due to hyperacidity of the stomach and gastric ulcers; congestion of the liver, due to catarrh of the bile ducts and a sluggish portal circulation, and beginning cirrhosis, acute and chronic catarrh of the whole genito-urinary tract. The water acts not only by

its chemical ingredients in these instances, but also mechanically as a sluice upon the system. It is well, therefore, for patients to drink it liberally. The water has undoubted beneficial influence upon gravel, lithiasis and the uric acid diathesis. Sanitary analyses have been made showing that this water is entirely free from every kind of contamination.

These waters when bottled are unsurpassed by any in the United States for drinking purposes, for they are not only pure and as pleasant as the Manitou or Idaho waters, but have the advantage also of the medicinal qualities so beneficial to the stomach and kidneys.

The North Platte River, in which are three wooded islands, runs through the city. It is an ideal place for a summer resort and sanitarium. The Sierra Madre Mountains on the west and south, and the Medicine Bow Range on the east, are each within two or three hours' drive, and present a beautiful view at all times. The trout fishing in the river and the mountain streams is unsurpassed. The summers are delightfully cool, there being no night when a blanket is not needed. With the completion of the Union Pacific's proposed connection, thousands who are in search of pleasure, health and business will yearly be attracted to this section. There is an old saying, "See Rome and die," but the legend of the west is, "See Saratoga and live."

By reason of the destruction of the Hot Springs Hotel and bath house by fire, a new large, modern hotel and bath facilities are needed. This presents one of the best opportunities for investment in the west.

Encampment is a town of recent origin, brought forth by the prospects of the new gold and copper mines opened in the Grand Encampment district, and has a population of about 1,000. It has a smelter, concentrating works and tramway to the top of the Rockies for conducting the ore. It is situated on the Grand Encampment River, twenty miles south of Saratoga. (See article on Mineral Resources.)

Schools.—The county has a good public school system. The number of schools is thirty-nine and the number of children of school age is 1,500.

Live Stock.—One of the chief industries of the county is its live stock interests. Of sheep there were, for the year 1904, 489,069, valued at \$917,773; of cattle, 27,953, valued at \$488,546; of horses and mules, 6,277, valued at \$163,114.

Agriculture.—This industry has for many years been an important one, continually on the increase, and has assumed large proportions in the Upper Platte Valley country and on the tributaries of the North Platte River. Wheat, oats and

barley are raised in large quantities and command a ready price for home consumption. The wheat is a very fine, plump grain, making the very best of flour. The oats are of a superior quality, and run from forty-five to fifty pounds to the bushel. All of these crops yield abundantly. Hay is an important crop, and the yield per acre is always satisfactory. Timothy and redbud grow luxuriantly, but the native hay, of which there is a large quantity raised, is much in favor. Alfalfa or lucerne is a prime favorite, and there is a large acreage devoted to the production of that crop. It yields from three to four tons per acre, each year, of a very superior quality, much esteemed by the stockmen for its fat-producing qualities. All kinds of vegetables and small fruits grow abundantly, and the entire home market is supplied by home production. All farming is by irrigation. There are still many thousand acres of upland, on either side of the Platte River, that are open to settlement, and this stream furnishes water for an almost unlimited acreage. The feeding of cattle and sheep for spring market is largely engaged in by the inhabitants of this county, who annually ship large numbers of sheep and fat beefs to eastern markets, commanding the highest market prices.

Mining.—See article on Mining Resources.

Climate.—The climate of Carbon County is beautiful, bracing and invigorating, mild and pleasant during the summer months and not severely cold or uncomfortable in the winter. It is peculiarly suited to the building up of weak lungs, and is conducive to health and longevity.

Water and Timber.—Carbon County is well watered by mountain streams, the North Platte River flowing the entire length of the county from south to north. Nearly every portion is abundantly supplied with water for irrigation purposes. The numerous mountain ranges in the county are covered with an excellent quality of pine timber suitable for building purposes and for the manufacture of lumber, as well as for fuel.

Game and Fish.—Carbon County streams, while originally barren of trout, have been well stocked with every variety of that kind of fish, and are today the finest trout streams to be found anywhere. Trout weighing from ten to twelve pounds are frequently taken from the North Platte River, and every stream swarms with the finny tribe. Game of all kinds, including bear, elk and deer, are to be found in the mountain ranges and timber; sage hens and grouse inhabit the plains and mountains, and the streams and lakes are well supplied with ducks and geese.

This county is in the Cheyenne United States land office district.

Converse County

This county was organized in 1888 and named after A. R. Converse, a pioneer cattleman, who had large interests in that section. It has a population of 3,337 and an area of 7,000 square miles. The North Platte River, with its many tributaries, flows through the central portion of the county, affording a bountiful water supply for thousands of acres of land which have been brought under cultivation, and its wide plains are among the best pasture lands of the state. The Chicago and Northwestern branch railroad traverses its entire length from east to west, and the Colorado and Southern railroad gives an outlet to the south. The total assessed valuation of the county in 1904 was given as \$2,540,232.45; the county bonded indebtedness, \$36,900; rate of taxation, 18¼ mills.

Until a very late date, the tract of country known as Converse County was given up to stock growing. Today there are thousands of acres of land under cultivation. Most of the cultivated acreage can be classed as bottom or low land, bordering upon streams, although in the southeastern portion lands are producing good crops of corn, wheat and oats without irrigation. The principal crop in small grain is oats. With irrigation, oats have reached the enormous yield of eighty bushels to the acre, with a stool of six feet. Wheat will yield fifteen bushels on sod and twenty bushels on old ground. Rye and barley produce twenty bushels to the acre. Tame grasses—timothy, clover and millet—reach a luxuriant growth. Alfalfa does well without irrigation, but when placed under ditch, affords two and three full crops per year. Corn makes a good crop in the eastern end of the county. Vegetables, under irrigation and in the bottom lands adjacent to streams, attain a growth equal to California's famous products. Potatoes yield several hundred bushels to the acre. Pumpkins and squashes reach a weight of 100 and even 160 pounds; cabbage, twenty-three pounds; turnips, twelve to fifteen pounds, and other vegetables in like proportion.

Converse County's chief mineral resources are coal, iron and copper. The finest coal found west of the Mississippi River is in the Shawnee Basin, fifty miles west of the Nebraska state line. Near Douglas is found a superior article of lignite, unsurpassed as a stove coal and a good steam fuel, but the vein is only two and one-half feet thick. At Inez,

sixteen miles west of Douglas, the vein is seven feet thick, with a sandstone roof. At Glenrock, twenty miles further west, the vein is about six feet thick, with a sandstone roof. A new mine has just been opened at Big Muddy, near Glenrock. Coal "crops out" in greater or less veins in a hundred localities throughout the western portion of the county, and particularly in the northwestern portion. Assays of \$68 in silver and gold, \$240 in "horn" silver, and forty to fifty per cent in copper have been obtained from prospect holes all along the Laramie Range in this county, and particularly from Spring Canon, some fifteen miles south of Douglas. Limestone is found in abundance, and quarries of a superior quality of sandstone have been located. Marble equal in grain and variety and beautiful color to the best has been discovered in several localities, while gypsum, from which is made the plaster of paris of commerce, exists in inexhaustible quantities. Large deposits of mica, glass sand and potters' clay have also been located.

Plenty of timber grows in the mountains and foothills, principally pine and spruce, and native lumber is supplied at reasonable prices. There is plenty of good land in the county subject to location, but it is being rapidly taken up. Lubricating oil is found in different portions of the county. Capital is at present engaged in developing this industry.

Douglas, the county seat, is located on the North Platte River and on the line of the Fremont, Elkhorn and Missouri Valley railroad, and has a population of about 1,000. The town is quite prosperous, being the center of a large and growing trade. The high prices received for cattle, sheep, wool and all farm products add greatly to its present prosperity. Its numerous business places, substantial dwellings, well graded streets, sidewalks, waterworks and other improvements attest the prosperity of the place. Its bonded indebtedness is \$17,000.

There are large oil fields within a short distance of Douglas, and gas was recently struck in commercial quantities within eight miles of the town. (See article, this pamphlet, on Oil.)

There are gold and copper mines south of Douglas.

Other towns of importance are Glenrock, Lusk and Manville, the former a coal mining town of about 600 population, and the two latter towns to which agricultural and stock raising districts are tributary.

The United States land office for this county is at Douglas.

Crook County

Crook County was organized in 1875, and was named after General George Crook, the noted Indian fighter.

This county is situated on the northeastern corner of the state. It is 102 miles long by sixty wide, and has an area of 6,120 square miles. Lands assessed, 228,953.45 acres; total assessed value of all property, \$2,336,929.28; tax levy, 20 mills; bonded indebtedness, \$51,500; number of schools, 45; number of school children, 1,132; population, 4,094. The county is traversed by the Burlington railroad.

County Seat.—The county seat and principal town is Sundance, with a population of about 500, situated at the foot of Sundance Mountain, on the banks of Sundance Creek, a beautiful mountain stream, and in the center of a fertile district. The city owns its system of waterworks, substantial city hall, fire apparatus, etc. Merchandising in all its branches, banking and commercial interests are well represented. The municipal bonded indebtedness is \$14,725, at six per cent interest.

Altitude and Climate.—The altitude of Crook County averages about 4,000 feet above sea level; the air is dry, bracing and healthful, with a mean annual temperature of 41.1 degrees. The yearly precipitation averages twenty-four inches. Agricultural products are grown throughout the county without irrigation.

Agriculture.—Agricultural pursuits claim the attention of many of the citizens of the county, and wheat, oats, rye, corn and every variety of garden vegetables are raised with profit, in many instances both the yield and the quality of the product being worthy of particular mention. Wild fruits of the smaller varieties are especially abundant, and considerable progress has already been made in the cultivation of the tame varieties. The soil throughout the county is a dark, rich loam of great fertility, and the fact that crops can be raised without irrigation facilitates agricultural pursuits. Wheat yields twenty bushels, oats thirty bushels, rye thirty bushels, corn twenty-five bushels, potatoes 100 bushels per acre; alfalfa, two cuttings, three tons per acre each cutting; millet four tons, timothy two tons. Apples do well, as do all kinds of small fruits.

This is the only county in the state where agricultural crops are generally raised without irrigation, and this is very

fortunately so, as there are but few streams of sufficient size and fall to furnish sufficient water for irrigation purposes.

This county is very much in need of railroad connections. A branch line from the Burlington would add greatly to the development of the county.

Live Stock.—In connection with agricultural pursuits, all kinds of live stock are raised extensively. The present return for assessment shows 38,382 neat cattle, 8,146 horses and 68,308 sheep, with a total live stock valuation of \$1,111,764.50.

Mining.—Gold, silver, tin, copper, lead and manganese have been found in considerable quantities, and extensive fields of a good quality of semi-bituminous coal are being developed. Much of the future wealth of Crook County will undoubtedly come from the development of the coal fields of that locality. Quite extensive gold placer mining operations have been conducted on Sand Creek and vicinity, with profit to the operators. Granite, porphyry, limestone and other building stones and fine marbles are found in great variety in abundance. A railroad has been built from Belle Fourche, South Dakota, to the Aladdin coal mines, near Barrett, Wyoming, a distance of eighteen miles. There are also extensive oil fields.

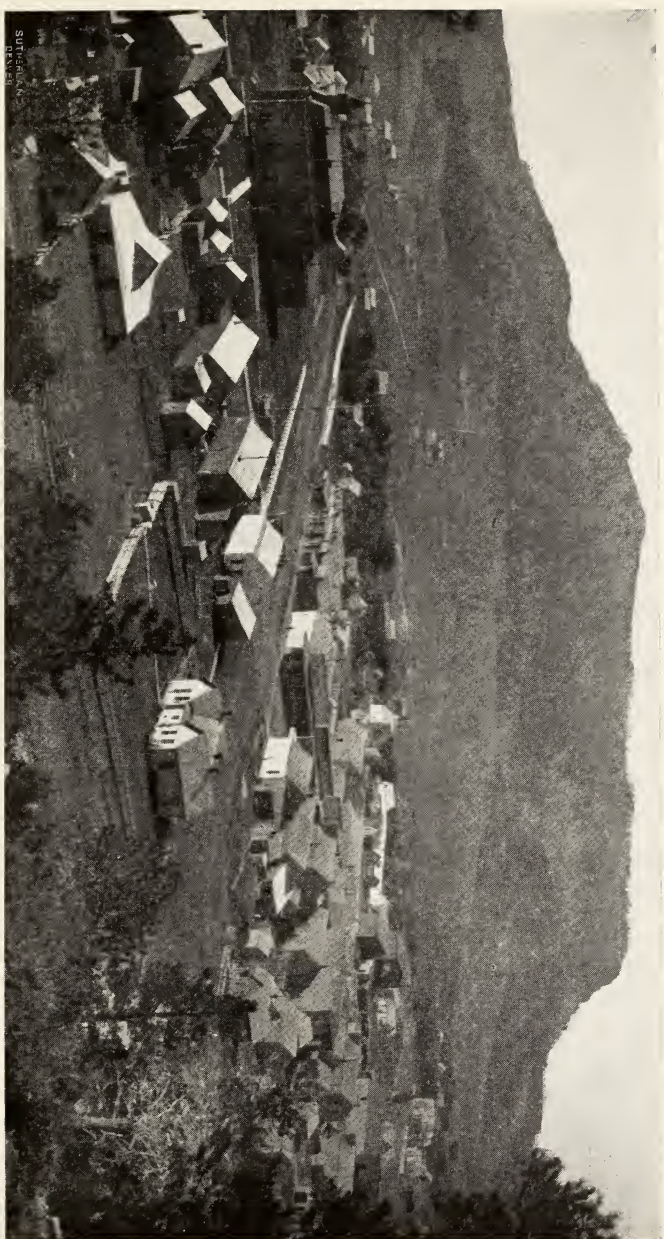
Streams and Topography.—The county is traversed by the Belle Fourche, the Little Missouri and the Little Powder Rivers. The water of the streams generally is pure and suitable to domestic uses. Along these streams are fertile valleys of fine farming lands, and between the streams are found extensive plateaus, suitable for grazing. Low ranges of mountains, well timbered, traverse the county, adding to the attractiveness of the landscape.

Timber.—The timber found on these mountain ranges is a heavy growth of spruce and pine. Oak, ash and cottonwood trees also abound.

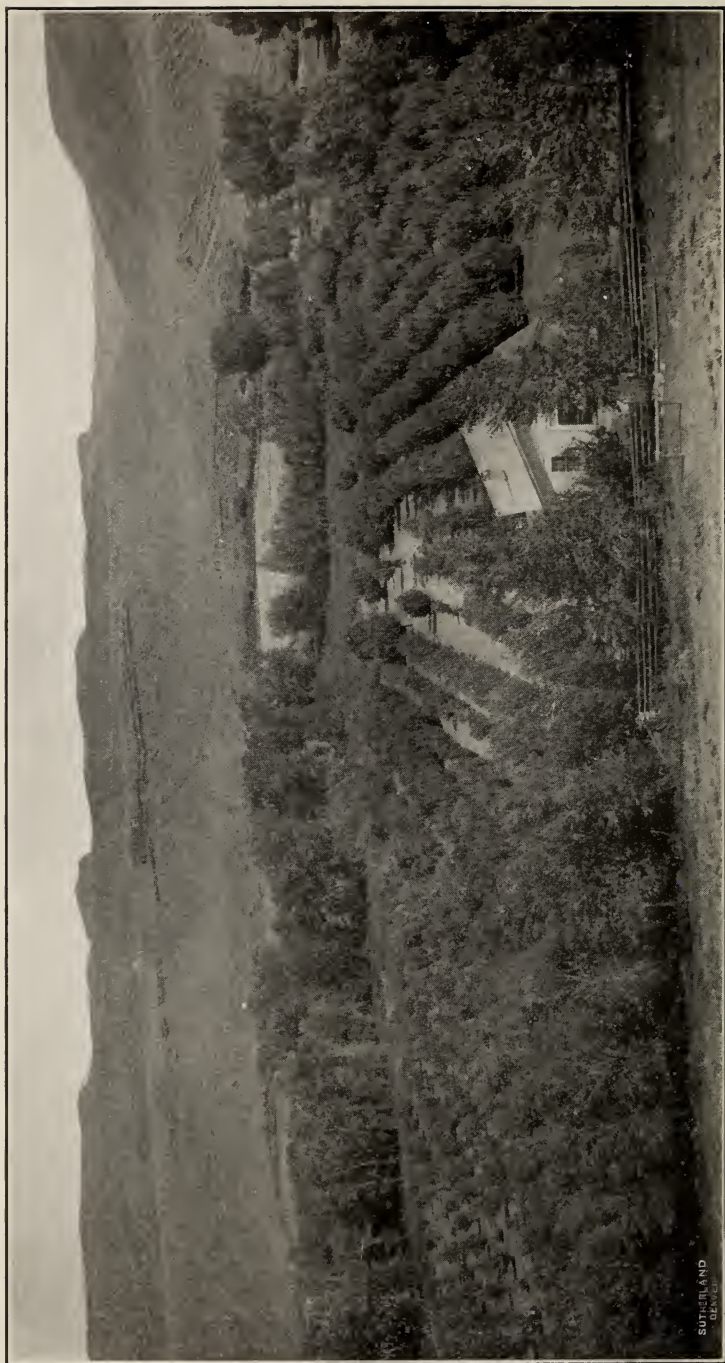
Fishing.—A branch of the State Fish Hatchery is located in Crook County, not far from Sundance, and many of the streams of the county furnish excellent sport to those who enjoy the pursuit of game fish.

Natural Curiosities.—A remarkable formation known as the Devil's Tower, a solid basaltic column rising abruptly to a height of 1,300 feet, and making a landmark that can be seen for miles in every direction, is a notable feature of the topography of this county.

This county is in the Sundance United States land office district.



SUNDANCE.



YOUNG'S APPLE ORCHARD, FREMONT COUNTY—25 VARIETIES.

SUPREMACY
OF GRAPE

Fremont County

Fremont is the west central county of the state, and has an average width, north and south, of 100 miles, and a length, east and west, of 125 miles. It was organized in 1884 and was named after General John C. Fremont, the noted pathfinder and first presidential candidate of the Republican party.

The rate of taxation for 1904 was 22 mills; the number of acres of land in the same year was 68,444, while the valuation of all assessable property in the county was \$2,089,585. The bonded debt of the county is \$32,200.

There are no railroads in the county, but two are promised prior to the opening of the Wind River Reservation, June 15, 1906. It is reached by daily stage from Casper, on the Fremont, Elkhorn and Missouri Valley railroad, and Rawlins, on the Union Pacific railroad. The mean annual temperature is 42°. The approximate elevation, outside of the mountain ranges, is 5,000 feet. It is destined to become a great agricultural district, though at present farming is engaged in only for the purpose of supplying a local demand. Nearly a million acres are susceptible of irrigation, including the land which will be left in the Shoshone Indian Reservation after lands have been allotted to all of the Indians. This land, when irrigated, produces most excellent crops of wheat, oats, alfalfa and other kinds of hay, every variety of vegetables and small fruit, and, in the more sheltered parts, fine orchards of the Wealthy and other varieties of early apples are yielding a crop which is superior in flavor to any apple seen in the irrigated counties. The average crops per acre are: Wheat, thirty to forty bushels; oats, forty to sixty bushels; potatoes, 200 bushels; alfalfa, two to three tons each cutting, and other grasses, about three tons of hay. The yield of other vegetables is in proportion to that reported for potatoes.

The county is famous for its rich agricultural lands and its abundance of water for irrigation. It is also noted for its fine apple orchards and abundance of small fruits. The wool clip of the county for 1903 was 1,200,000 pounds. There are many small cattle ranches in the county, which have been operated successfully for many years. Wheat is grown in the Lander Valley, and it has been a profitable crop annually for the last fifteen years. There are three improved flouring mills in the county, one located at Lander, another in Milford, the third at the Shoshone Agency. All these mills turn out

high patent process flour, and the product is equal to the best anywhere. Oats and all kinds of garden vegetables grow to perfection. Alfalfa and timothy yield abundantly, and native hay grasses abound everywhere.

There is an abundance of timber for building purposes and saw mills to cut up the lumber. A fine quality of coal is found in inexhaustible quantities all along the valley, which provides a cheap fuel for domestic and steam purposes. There are a number of oil springs in the county, and ten miles south of Lander are thirteen flowing wells, with a capacity of 200 barrels per day each. These wells are plugged at present, awaiting the advent of a railroad. (See article on Oil.) White and red sandstone, for building purposes, is found in every part of the county. Eight miles west of Lander there is a deposit of gray marble, and near it an abundant supply of granite. Both of these are susceptible of a high polish.

The streams of Fremont County are numerous and of a lasting character. The Big Horn, Wind River, Little Wind and the numerous branches of the Popo Agie are the fountain heads of the Missouri River. They take their rise in the Wind River Range, whose mountains are among the loftiest of the Continental Divide.

Fish abound in all the streams of this section, and trout fishing is the pastime of many. There is an abundance of elk, deer and antelope, and a number of varieties of bear in the Wind River Range and Owl Creek Mountains, which extend nearly the whole length of the county.

Southern Fremont County has numerous gold deposits, both in placer and quartz. (See "Mineral Resources," this pamphlet.)

Lander, the county seat, is centrally located, and is surrounded by hundreds of improved farms. The court house is a fine, large brick structure. The public school building is of brick and contains nine large rooms. The school is graded, and the graduates of the high school are admitted to the State University. Three religious societies have church edifices, namely, Methodist, Episcopal and Catholic. The population is 737.

The town of Thermopolis is situated on the west side of the Big Horn Hot Springs Reservation, and contains about 300 inhabitants. This town was started in September, 1897, and is growing rapidly. The Big Horn Hot Springs are just across the river, in Big Horn County, and are a source of considerable revenue to the town. (See "Hot Springs," Big Horn County.)

For information relative to the opening of the Wind River Reservation, June 15, 1906, see article thereon in the chapter pertaining to land and irrigation matters.

The United States land office for this county is at Lander, except for a few townships in the southeastern portion of the county, which are in the Cheyenne land office district.

Johnson County

Johnson County was organized in 1879, and was named after E. P. Johnson, a prominent attorney of Cheyenne. It has an area of 4,046 square miles. The total assessed valuation of the county in 1904 was \$2,092,425.98; county bonded indebtedness, \$50,800; tax levy, 20¾ mills; the population of the county, 2,361. With its rolling plains, extensive forests and fertile valleys, it is justly regarded as one of the best sections of the state. The Big Horn Mountains have an elevation of 14,000 feet, while many of the valleys are less than 4,000 feet above the sea level.

The resources of the county are varied. Stock raising is the chief industry. The vast open range and abundant streams of pure water make it a paradise for cattle. There are thousands of acres of grazing lands, and sufficient land can be irrigated to produce enough hay, grain and alfalfa to make winter feed for all the live stock that the range will support in summer. The county is one of the best watered counties in Wyoming, being well supplied with small streams heading in the Big Horn Mountains, and flowing generally to the northeast and northwest.

The northern part of the county is a good farming country and easily accessible by means of the Burlington railway. All kinds of vegetables are successfully raised; cabbage, turnips, rutabagas, lettuce, parsnips, cauliflower, beets, carrots, celery, broomcorn and sorghum cane are all grown with success, while melons and small fruits of unequaled flavor and excellence are cultivated. Yield of oats per acre is forty-five bushels and upwards; potatoes average 400 bushels; alfalfa produces two crops per year, of from four to seven tons per acre; and other crops in proportion.

There are 30,000 acres under irrigation, and 200,000 acres are susceptible of irrigation and only await the advent of the industrious settler, who can here obtain a good home cheap, and there are 2,000,000 acres of available grazing land. Pasture lands sell for \$2, irrigated from \$15 to \$25. Prices of products obtained by ranchmen are as follows: Alfalfa, \$3.50; timothy, \$6; bluestem, native, \$8 per ton; oats, \$1.25 per cwt.;

wheat and potatoes, \$1 per cwt. There is a large supply of pine timber taken from the mountains, which is well suited for building purposes. Along the streams are thrifty groves of cottonwood, and experiments have shown that timber of various kinds can be as successfully grown here as in the prairie states of Kansas and Nebraska.

Minerals are yet undeveloped, but valuable prospects in gold, silver and copper are found in the Big Horn Mountains. Oil is found in large quantities, but because of a lack of transportation facilities is not worked.

This county is, without doubt, one of the best range counties in the state. It has one of the finest winter ranges in the west, where stock can roam at will, secure from winter storms in the shelter afforded by the high hills and deep gulches, while on account of the protection given by the location of the Big Horn Mountains and its spurs, lying to the west and north, blizzards are unknown, and the fall of snow is the least, especially on the head of Powder River and its tributaries, of any place in the same latitude in the United States, with the probable exception of a small strip on the Pacific coast. The hills are covered with a thick sod of buffalo and other native grasses, and the cattle on the range in the central and southern parts of the county keep in as good condition as many of those in pastures where they have been fed nearly all the winter.

Buffalo, the county seat, has always been a prosperous town, and at the present time has a population of 1,000. It is the business center of a fine grazing and agricultural district and has superior natural advantages.

Clear Creek could furnish water power for a hundred factories, besides irrigating several thousand acres of land. At the present time Buffalo is thirty-two miles from the Burlington railroad, but at no distant day expects to have a railroad connection. Its citizens have been very enterprising in building up the town, having erected a \$40,000 court house, a \$15,000 school house and numerous brick buildings. The city also maintains an electric light plant, flouring mill, waterworks and two newspapers. Two stage lines are operated, one leaving daily for Sheridan and the other for Clearmont, the nearest railroad point. The town of Buffalo needs an electric railway connection with the Burlington Route, a distance of forty miles down Clear Creek, where water power can be obtained therefor.

The Government, under the National Irrigation Act, contemplates using the waters from Lake De Smet for the irrigation of a vast tract of land, which, if done, will open same to settlement, with water on the land.

Here is located the State Soldiers' Home, upon 1,270 acres of fertile land. The buildings cost over \$100,000.

The United States land office for this county is at Buffalo.

Laramie County

Laramie County was organized in 1879, and was named after Jacques Laramie, a French fur trader, who was killed near the mouth of the Laramie River about 1820. The Laramie River, Laramie Peak, Fort Laramie and Laramie County were named after this pioneer.

The county indebtedness is \$400,000, and the rate of taxation is $20\frac{3}{4}$ mills. The total number of acres of land listed for taxation is 1,083,266.19, and the value of all real estate in the county, including town lots, is \$3,113,731.50; total value of all assessable property in the county is \$6,782,438.32.

This county is located in the southeastern portion of Wyoming, and comprises an area of 7,000 square miles. It ranks first in population and wealth, and was one of the original four counties of the Territory of Wyoming. The rolling plains along the eastern slope of the Black Hills Range, varying in altitude from 4,000 to 8,000 feet, are its natural features. These plains are peculiarly adapted to grazing. In all parts of the county are found numerous streams. The total acreage of the county is 4,520,000, of which 3,000,000 acres are fine grazing land and 1,000,000 are susceptible of being made rich agricultural lands.

It is full of undeveloped resources; has iron, coal, copper, gold and silver, sandstone, marble, granite, mineral paint and mica. The land is generally free from stones and other obstructions, and is easily broken and cultivated, and is very fertile.

Laramie County has passed from a purely pastoral condition to one of mixed husbandry. Stock raising, farming, dairying and gardening are practiced in varying degrees. The average temperature is about 60° F.; the rainfall fourteen inches. All field crops common to the west succeed well.

The development through irrigation has not been confined to any particular locality. The soil is exceedingly fertile, the water reliable and the altitude sufficiently low to warrant the planting of any of the ordinary field crops. The creeks are lined, therefore, with the farms of ranchmen, who, combining farming and stock raising, are prosperous.

County Seat.—The City of Cheyenne is the county seat of Laramie County and the state capital, and has a population of 14,000. Owing to the rapid advancement of Cheyenne after the settlement in 1867, it gained the title of "The Magic City," and has always been noted for the wealth and enterprise of its citizens. The city was designated as the capital when Wyoming Territory was organized in 1869. It is 516 miles west of Omaha, on the line of the Union Pacific. It is also the junction point of the Colorado and Southern and the terminus of the Burlington Route.

Cheyenne has an extensive system of waterworks, the latest and most approved sewerage system, fire department and fire alarm system, telephone exchange, arc and incandescent electric lighted streets, besides gas for general use; has a new opera house building in process of construction, to cost \$80,000; a \$30,000 club house, fine business blocks, elegant private residences, two banks, eleven churches, two daily newspapers and state capitol costing \$300,000. Among the other institutions are the federal building and postoffice, costing \$350,000; Elks' home, costing \$30,000; Masonic temple, \$50,000; five public school buildings, built at an average cost of \$30,000; convent school, erected at a cost of over \$50,000; a county hospital, a county court house and jail, and extensive railroad shops, employing 700 men. Andrew Carnegie gave \$50,000 for the construction of a public library, which has been built. The city is the supply point for an immense stock raising and agricultural country, and its citizens are among the largest live stock owners in the state.

Fort Russell, three miles from the city, is the largest and most important military post in the Department of the Missouri.

There are several manufacturing establishments in the city, and the volume of business transacted annually amounts to many thousands of dollars. A creamery established several years has a big business and draws trade from a large section of country.

Strangers view with delight the miles of smooth stone flagging and cement sidewalks that line almost every street in Cheyenne. The beauty of many of the streets and avenues is greatly enhanced by the bright green turf on either side of the walks, which, together with long lines of trees, forms an agreeable feature of the city's landscape. Nowhere can be found more delightful drives. Nature has provided roads equal to the smooth gravel roads of Central Park, New York. The people of Cheyenne have made it one of the most attractive places in which to live in America.

One of the greatest attractions of the city is its pure and healthful climate. Its air is an invigorating tonic, cool in the summer, mild in winter. No better summer climate can be found in our land.

The Wheatland Colony.—No more important enterprise has been undertaken and carried out to successful results in the reclamation of arid lands than that of the Wheatland Colony by the Wyoming Development Company of Cheyenne. Each year since the initiation of the enterprise the company has done much for the betterment of the system. Its great irrigation plant now means the successful and ultimate reclamation of fully one hundred thousand acres. The lands reclaimed and being reclaimed are in the northern half of Laramie County, by railroad ninety miles from Cheyenne, on either side of the Colorado and Southern railroad.

In the selection of a locality for an irrigation plant, many things should be considered, among which are, a market for the agricultural products, the soil, water supply and accessibility to timber. The Wheatland Colony has all these advantages. The altitude, 4,500 to 4,800 feet, is the happy medium for the cultivation of lands with the aid of irrigation.

The water is taken from the Laramie River, the Sybille and Blue Grass Creeks, through three canals. Number one is thirty-four miles long, has a width of twenty feet on the bottom and a depth of four feet. Canal number two is twenty-two miles long, has a depth of three and one-half feet and a width on the bottom of twenty-two feet. Canal number three is twelve miles long, has a width of fifteen feet on the bottom and a depth of three feet. The water is turned from the Laramie River to the head of Blue Grass Creek by means of a tunnel. The Blue Grass carries the water to Sybille Creek, and from that stream the water is conducted by the above mentioned canals across the lands to be irrigated by laterals, distributed wherever necessary. To reinforce the water supply in case of drouth in any season, water has been turned into natural reservoirs. Number one has a shore line of eight miles. No more extensive reservoir has yet been found in the United States than number two; it is seven miles long, averaging two and one-half miles in width. Its greatest depth is thirty-five feet, and its average depth is eighteen feet. It covers 6,600 acres, and has a shore line of thirty-five miles. It carries 118,800 acre feet of storage.

A timber supply of sufficient abundance for all domestic purposes is near at hand.

The soil is a black loam, well adapted for all small grains grown in the temperate zone, alfalfa, clover, potatoes, sugar

beets, vegetables and some varieties of Indian corn. The experiments with growing apples, cherries, plums and all small fruits have been satisfactory. That the soil is well adapted for the production of wheat, oats, barley, rye, potatoes, turnips, flax, beets, cabbage and certain varieties of corn, has been shown by repeated tests and experiments. Timothy does exceedingly well, and crops of alfalfa produced mark the country as one of the best for growing this profitable forage plant. Experiments in growing sugar beets have been so successful that doubtless before long a sugar beet factory will be established in the colony. Experts of two of the sugar beet companies of the United States have made very favorable reports to their companies on the Wheatland Colony as a place for the establishment of a sugar beet plant.

The school system is of the very best. There are nine good schools in the colony. The colony is supplied with rural mail delivery and collection.

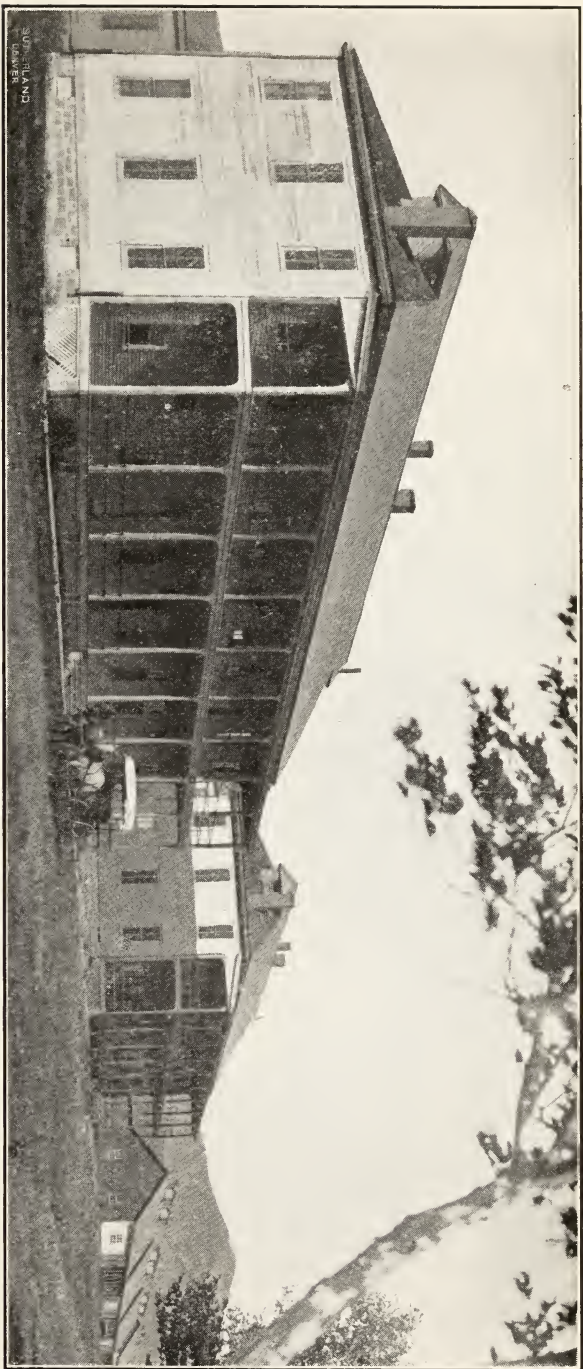
The City of Cheyenne, the towns of Guernsey, Hartville, Wyncote, Torrington and Sunrise, and the mining and stock raising sections afford good markets for everything raised in the colony.

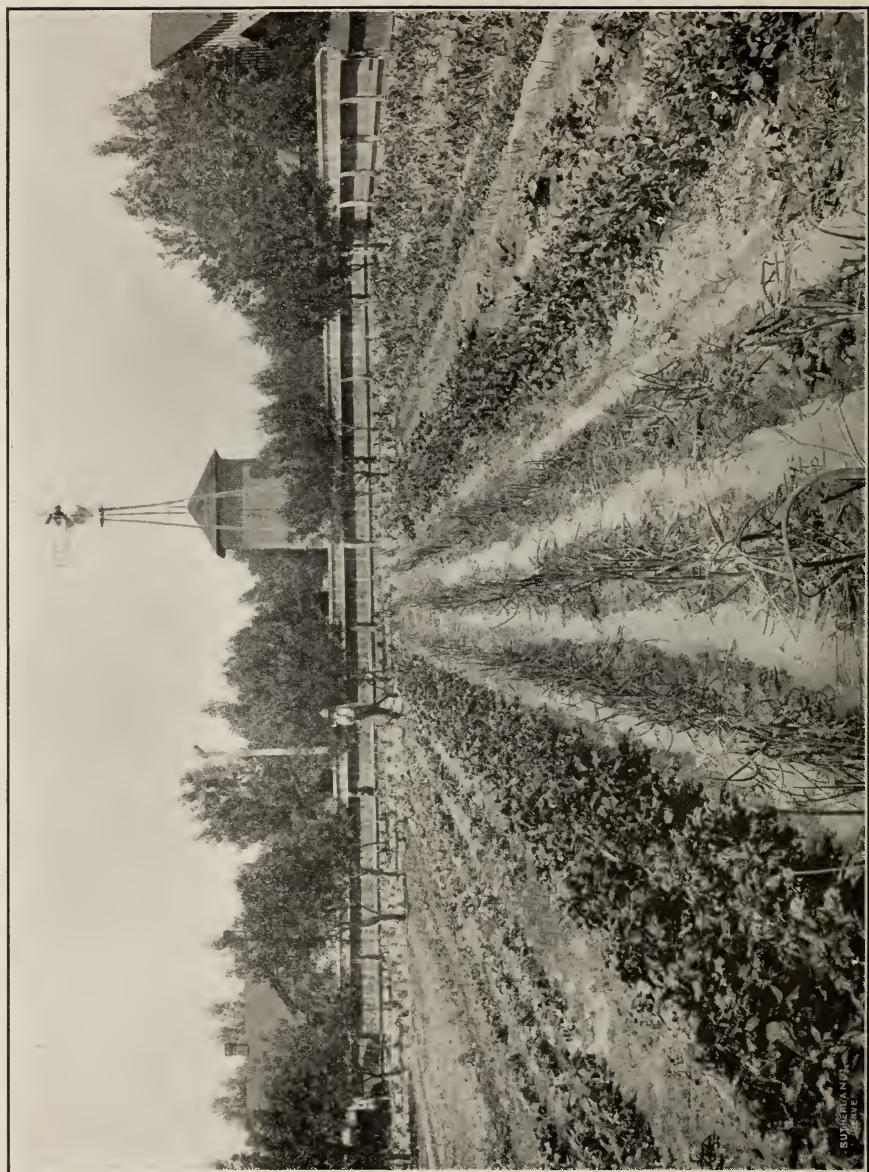
Sheep and cattle feeding are no longer experimental in the colony. It has become a very profitable business. Alfalfa is the foundation of successful sheep and lamb feeding. The hog business is proving very profitable around Wheatland. Hog cholera is unknown in Wyoming. The climatic conditions are very favorable for stock growing and feeding.

The thrifty town of Wheatland is in the center of the colony. It is on the Colorado and Southern railroad, which connects at Cheyenne with the Union Pacific and Burlington systems, at Orin Junction with the Fremont, Elkhorn and Missouri Valley railroad (a part of the Northwestern system), and at Hartville Junction with the Burlington.

The town has a population of six hundred, made up of a fine class of people, intelligent, hospitable and public spirited. It has fine school buildings, three churches—Methodist, Congregational and Roman Catholic—a library and a good library building. The town is supplied with a telephone exchange, and has long distance connections with all the large towns of Wyoming, Colorado, Utah and Idaho. There are five general stores, a drug store, two livery stables, two hotels, one bank, a harness and saddle manufacturing establishment, two blacksmith and carriage shops, two newspapers, five secret orders, a good hall and a modern roller mill with a capacity of 125 barrels a day.

Coal is cheap. Wood is abundant and may be had for simply the cutting and hauling. Good native lumber is worth





IRRIGATED GARDEN—WHEATLAND.

\$15 per thousand, or from \$7 to \$10 at the mills. Building stone is plenty and bricks are made in proximity to the town.

Wheatland has a good outlook, and is one of the many sections of the state that promise good and speedy returns for capital invested. The agriculturalist who is looking for an ideal farming country; cattle and sheep producers who are desirous for the most advantageous conditions for stock raising; the business man who is seeking the new town full of promise, with a growing surrounding country, and those broken in health who seek a favorable climate, will find good openings at Wheatland. The lands are selling rapidly for from \$22.50 to \$35 per acre. Ten years' time is given, with equal annual payments, at six per cent interest. No payment except the interest has to be made the second year, which gives the settler an opportunity to pay for his farm even though his means be limited. A perpetual water right goes with each piece of land, and a purchaser of a Wheatland farm cannot be deprived of an equal water right with every landholder any more than he can be deprived of the land itself. The land and water go together. When the lands and water have all been sold, the irrigation works will be absolutely under the control of those holding lands in the colony.

During the winter just passed 25,000 head of sheep were fed at Wheatland, all of which, with the exception of about 1,000 head, were lambs. They were fed by William Ayers, M. R. Johnston, William Trenholm, D. M. Southworth, William M. Clark, Albert McElheny, Duncan Grant, Shephard Bros., William Nelson and A. M. Axford. With the exception of Mr. Ayers and Mr. Johnston, each of whom fed 5,000 head, they were fed in small bunches, but all were fed by men on their own lands; all of whom produced a part of the hay required for the feeding. There were 5,000 tons of hay fed and fifty car loads, or 2,500,000 pounds, of corn fed.

The feeding was very profitable, as the net profits were from \$1 to \$2.50 per head. The ruling price for the alfalfa hay in the stack is from \$3.50 to \$4.50 per ton. There was left over a surplus of hay that would have fed as many more sheep. Owing to the increased acreage of alfalfa to be harvested this season, the Wheatland Colony will be in position to feed and fatten 75,000 lambs during the coming winter.

The sheep feeding conditions are most favorable at Wheatland.

Guernsey.—The new town of Guernsey, which is the natural railroad and business center of the iron region known as the Hartville Iron Range, and described elsewhere in this book under Mineral Resources, is located at the base of the

Iron Range in the Valley of the Platte River. It is beautifully situated below the mouth of the Grand Canon in a broad sweep of intervals in a bend of the river. With the development of the mining and stock industries and railroad building, with which its interests are identified, and from which it sprang into existence, its future growth is assured.

Its location marks it as one of the coming industrial cities of Wyoming. It already has two railroads, and with the western extensions of the Burlington, will become a division headquarters on its continental system, and will have connection with the mining camps, not only of the Hartville Range, but those of Halleck Canon, Plumbago Canon, Squaw Mountain, Horse Shoe Park, North Laramie and the Peak Range. North of Guernsey are the mining camps of Whalen Canon, Wildcat, Muskrat and Rawhide Buttes, which will be reached by a spur on the eastern slope of the mountains.

The establishment of industrial enterprises at Guernsey is to be promoted by the building of a big dam at the mouth of the canon, where the immense volume of Platte River water will be utilized for electric light, power and water systems second to none in the west. The electric power generated here will not only furnish light, but will in time operate all the mines of the range, while the water supply will irrigate thousands of acres of land along the valley, as well as provide an admirable water system for the City of Guernsey, with its mills, smelters and workshops, at a small expense.

Sunrise is the headquarters of the Colorado Fuel and Iron Company's mines. Development work on some of the mining claims at Sunrise and Hartville show indications of good gold values, and a gold mining district may be developed.

Dry Farming in Laramie County.—Laramie County has not only the greatest irrigation enterprise in Wyoming, but it has millions of acres susceptible of profitable cultivation by a scientific system of dry farming. Hon. W. C. Deming, of the committee having the important work in charge, makes the following statement:

"Cheyenne is the center of the dry farming movement in Wyoming. There are two distinct and active movements now in progress along this line.

"The Agricultural Department of the United States has contributed \$2,000; the Union Pacific railroad, \$1,000; the Burlington railway, \$1,000; the State Agricultural College at Laramie, \$500; the Colorado and Southern railroad, \$350; the Cheyenne Board of Trade, \$150; making a total of \$5,000 for experiments to be carried on over a series of years. The farm, embracing about 100 acres of land, is located near Cheyenne,

and the experiments will range from absolute dry farming to winter irrigation and summer irrigation by windmills. The experiments are in charge of Prof. Elwood Mead of the United States irrigation office, State Engineer C. T. Johnston, Prof. B. C. Buffum of the State Agricultural College. John H. Gordon is superintendent.

"The other movement is on a larger scale, so far as immediate work is concerned.

"Laramie County, the City of Cheyenne and the Cheyenne Board of Trade have raised an experimental fund and placed the work in the hands of the following committee: W. C. Deming, Chairman; H. B. Henderson, Secretary-Treasurer; C. B. Richardson, Chairman Executive Committee, and Dr. V. T. Cooke, Director.

"Dr. Cooke is a practical farmer from East Oregon, who has farmed successfully for twenty years without irrigation. He is located at Cheyenne, and is now superintending fifty different tracts within twenty-five miles of Cheyenne, each varying from one to fifty acres.

"The Cheyenne system is an application of common sense principles to farming in an arid region. It embraces thorough preparation of the soil by deep plowing and frequent harrowing, allowing the soil to summer fallow, thereby gaining two years' moisture for each crop. From hay and forage alone, land hitherto worthless, except for grazing purposes, is being quadrupled in value.

"Dr. Cooke, like W. H. Campbell of the Campbell system, guarantees remunerative results in potatoes, dry land alfalfa and all cereals which grow by irrigation, if seeds adapted to the arid region, and developed from dry land farming, are used, and careful and intelligent methods of cultivation pursued.

"Many Laramie County ranchmen have met with moderate success in dry farming for years, but expect to materially increase their yield under the personal direction of Dr. Cooke."

The United States land office for this county is located at Cheyenne.

Natrona County.

Natrona County was organized in 1888. It derives its name from the natural deposits of natron, or carbonate of soda, found in the numerous basins or lakes that abound in that section of Wyoming. Located in almost the geographical center of the state, it covers an area of about seventy miles

square. The Platte River, with its numerous tributaries traversing its entire length, a distance of seventy-five miles from east to west, furnishes an abundant supply of water for irrigation, and as the mean elevation is 5,500 feet, the farmers of the county can raise all the hardy grains, vegetables and fruit common to the northwestern states.

At the present time the live stock interest leads all other industries in this county. The Fremont, Elkhorn and Missouri Valley railroad, a branch of the great Northwestern system, affords an outlet to eastern markets. The assessed wealth of Natrona County in 1904 was \$2,035,491.92. The county indebtedness is \$15,900, and the rate of taxation for the year 1904 was 20 mills.

The raising of sheep overshadows all other industries. The fleece of a Natrona County sheep will average seven pounds, and the total wool clip for 1905 approximates 3,000,000 pounds.

But it is the undeveloped resources of Natrona County that offer the greatest inducement for the investment of capital. Already the oil industry has reached an important stage of development. (See article on Oil.)

Steam coal exists in Natrona County. Lignite coal, varying from a few inches to several feet in thickness, is found in various parts of the county. The inexhaustible deposits of sulphate and carbonate of soda, which are formed from natural springs, will some day be the basis of a great and profitable industry, and only await the magic touch of capital and skill to develop their greatest possibilities.

Among the natural wonders of Natrona County are the Alcova Hot Springs, which possess medicinal virtues for the treatment of rheumatism and kindred diseases. These springs are located on the North Platte River, in the mountains, and are surrounded with beautiful scenery. Considerable development has been made in the mining of precious metals. Deposits of gold and silver ore are found in the mountains. Low grade ores, which assay from five to ten dollars a ton, are abundant, and in time can be profitably mined. Coal, copper, iron and valuable building stone are found in various localities. The best developed copper claims in Casper Mountain assay from 37 to 40 per cent copper. Asbestos is also found.

Casper, the county seat of Natrona County, is a thriving town of 1,200 inhabitants. It is the western terminus of the Fremont, Elkhorn and Missouri Valley railroad, which gives it a large and important freighting business and trade with the country west of Casper, including the prosperous counties of Fremont and Hig Horn. Its fine business blocks, churches

and school houses attest the liberality of the people. Among the recent improvements are fine waterworks and a steam plant for shearing sheep. There are about 7,000 acres of land irrigated, while there are 50,000 acres susceptible of irrigation and 3,700,000 acres of pasture lands.

The United States Government is constructing an immense dam above Alcova, turning the Grand Canon of the Platte into a storage reservoir and affording water for reclamation of arid lands. (See article on North Platte project.)

The United States land office for this county is located at Douglas.

Sheridan County.

Sheridan County was organized in 1888, and was named for General Phil Sheridan. It is situated in the central part of Northern Wyoming. It is ninety miles east and west, and thirty miles north and south, containing 2,700 square miles. This area is divided as follows: Three hundred and seventy-eight thousand acres mountainous, 350,000 acres irrigated or capable of irrigation, 1,000,000 acres grazing lands. There are now, approximately, 200,000 acres under cultivation.

The assessed wealth of Sheridan County in 1904 was \$3,433,524.15; rate of taxation, 20 mills; bonded indebtedness, \$21,700.

The principal products of the county are cattle, hay, oats, wheat, potatoes and coal. Farming, in connection with stock raising, is the chief occupation of the people, being by far the best paying business. This county combines in an exceedingly favorable manner crop raising and stock raising. The range grasses here are considered by stockmen to be unexcelled. An evidence of this is in the fact that range beef from this county usually brings the highest price for that class of beef in the Chicago market. Referring to the crops, they also receive the highest awards, both for quality and quantity.

The climate here is good. The chinook or warm winds from the Pacific Ocean keep the range open during the winter.

The annual output of coal is 500,000 tons, the greater part of which is shipped to the Black Hills and points in Nebraska. Of wheat, 200,000 bushels are raised each year, the acreage being on the increase, but by far the largest acreage in crops is given to the raising of hay, principally alfalfa. This is the case where the business is that of stock raising. It is notable,

however, that as farmers come into this country from eastern states the farm is made to produce greater profit in the raising of grain, potatoes and small fruit. This county secured at the World's Fair in Chicago a medal for the best spring wheat raised in 1893.

The mountainous part of Sheridan County shows prospects rich in copper, and good samples of gold, silver, nickel and other minerals are found. This part of the county contains a large number of natural basins for the storage of water, which insures a vast development at no distant time in the production of crops requiring late irrigation. With abundance of water, the prospects in the mountains being developed into mines, the whole country being underlaid with coal, Sheridan County combines the resources essential as a foundation upon which to make a rapid and permanent development on a sound basis.

One of the pleasing features is the excellent trout fishing to be found in all of the twenty-two streams flowing from the Big Horn Mountains. These streams were found in early days to be the natural home of the Rocky Mountain trout. Of late years most of the streams have been stocked with the eastern brook trout. The Big Horn Mountains afford the finest places for summer camping. Summer resorts have been erected at some of the lakes in the mountains where the fishing is the best, and here one can walk over great drifts of snow, which never entirely disappear.

The Burlington and Missouri railroad has a line traversing the entire length of the county, and has projected lines in other directions. There are ten churches, numerous excellent schools, flouring mills, brick yards, a brewery and a number of small manufacturing concerns.

The Town of Sheridan is the county seat of this county, charmingly located at the foot of the Big Horn Mountains. It has a population of five thousand, and has every improvement necessary for the enjoyment of a thoroughly up-to-date city and has the rural mail delivery system. There are eight churches, lodges of all fraternities and a club. Within three miles of the city is situated Fort McKenzie, garrisoned by United States troops. About twelve miles north of the city is the south boundary line of the Crow Indian Reservation, from which Indians come to Sheridan in large numbers to trade. At Sheridan, also, is located a State Hospital.

This county is one of the best agriculturally developed counties in the state, and is a splendid example of what will shortly be done in this line in other counties.

The United States land office for this county is located at Buffalo.

Sweetwater County.

This was originally called Carter County, after a pioneer, Judge Carter, when a part of Dakota, but upon the organization of the Territory of Wyoming, in 1869, the name was changed to Sweetwater, after the Sweetwater River, which was so named by General Ashley in 1823.

The chief industries are coal mining and stock raising.

In the year 1904 the total assessed value of property in the county was \$4,072,054.91. The total bonded indebtedness is \$76,700; the rate of taxation, 20 mills.

Green River, the county seat of Sweetwater County, has a population of about 1,200, and is essentially a railroad town, being a division point on the Union Pacific. Extensive repair shops are operated here by the railroad company. The surrounding country is devoted largely to the grazing of sheep and other live stock. A system of waterworks has been constructed at a cost of nearly half a million dollars, for the purpose of pumping water from Green River to Rock Springs, a distance of eighteen miles, where extensive coal mining operations are carried on by the Union Pacific. Large quantities of ice are annually stored at Green River, and during the summer season between four and five hundred thousand railroad ties and mine props are floated down the river and distributed at this point. A saw mill is maintained for the manufacture of rough lumber.

The most promising industry in Green River, at the present time, is the production of sal soda, which is likely to assume vast proportions in a short time. Several wells have been sunk on the bottoms of Green River, that yield an inexhaustible supply of water containing an average of twenty-five per cent of soda crystals, or, in other words, twenty-five pounds of sal soda to every one hundred pounds of water. The development of this industry at first was very much retarded by the failure to secure freight rates that would enable the chemical company to place their product on the market. A few months ago rates were obtained that enables this product to compete at Missouri River points and on the Pacific coast. The result was that in September last the company shipped 150 tons of sal soda, which had a market value at Omaha of \$24 per ton. Wyoming sal soda is superior to that manufactured from salt, and has been given the preference wherever installed.

Rock Springs.—Eighteen miles distant on the line of the Union Pacific is located the town of Rock Springs. Here are operated the largest coal mines in the state. It has a population of 5,000, composed very largely of miners, and is one of the most active business points in Wyoming. It is well built, having fine business blocks, a water system, electric light plant and a magnificent \$25,000 city hall. At this point is located the Wyoming General Hospital, maintained by the state.

The citizenship of Rock Springs is cosmopolitan. Twenty-five languages are spoken, and almost every important country on the face of the earth is represented.

Rock Springs is a great wholesaling point. Here is found some of the greatest stocks of merchandise in the state, and the merchants push their trade into the mining districts of Central Wyoming and the cattle and sheep country lying in all directions from this enterprising market.

Industries.—The county is well suited to sheep raising, and many citizens are so engaged. The broken and diversified character of the country, covered as it is with white sage and nutritious grasses, furnishes just the conditions conducive to the successful management of that class of live stock, 450,000 head being run upon the plains.

The entire county is underlaid with veins of coal, which, however, have been more extensively developed at Rock Springs than elsewhere, and the term Rock Springs coal is synonymous throughout the west with coal of exceptional quality. The output is 2,000,000 tons per annum.

There are vast areas of undeveloped coal lands in the county, principally to the north of the railroad, much of which on being prospected shows excellent coal in veins from three to twelve feet thick.

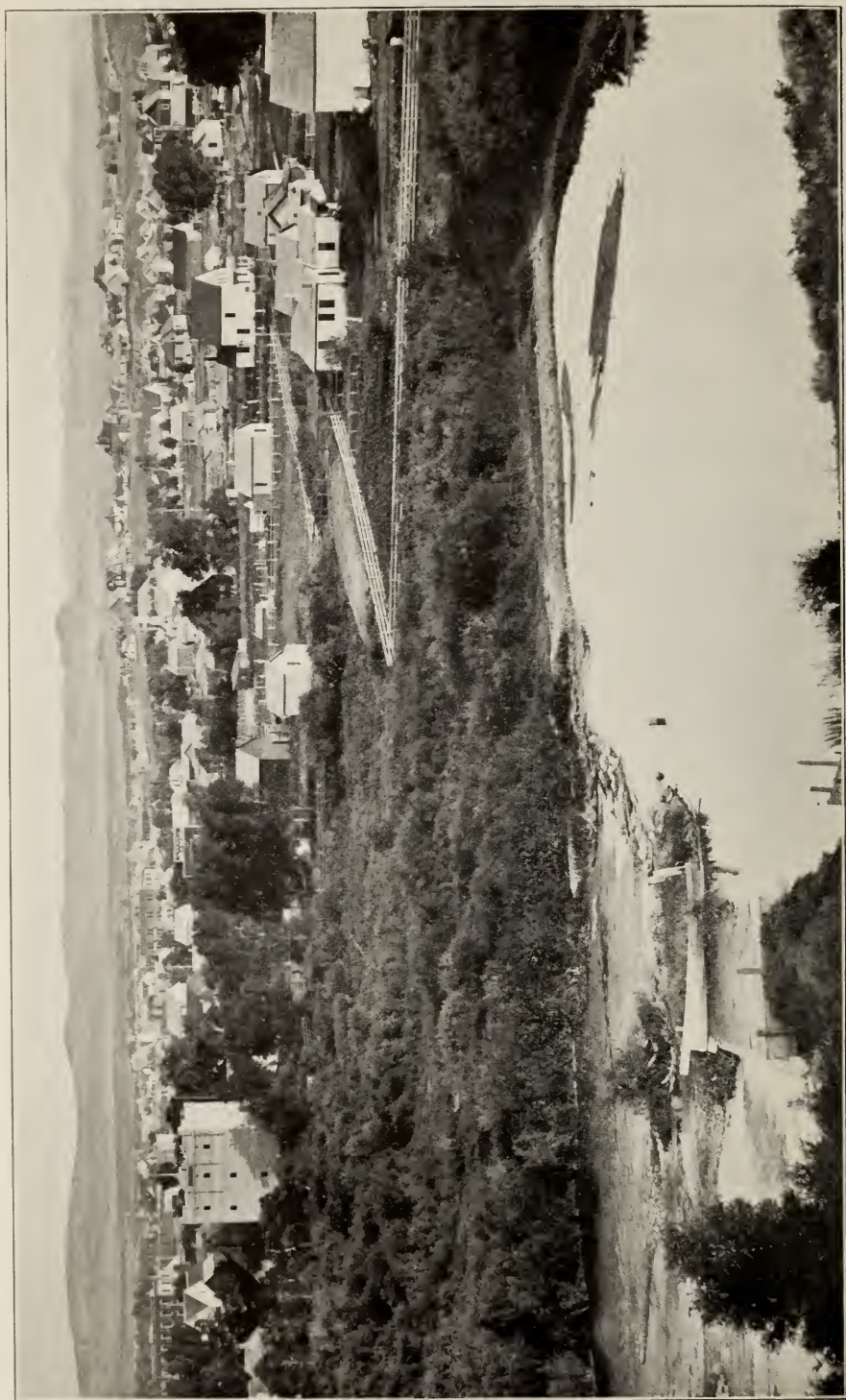
The Red Desert, lying in the eastern half of Sweetwater county and the western portion of Carbon County, was long thought to be absolutely valueless. but in recent years it has proved of great worth as the winter range of many thousands of sheep. There are no streams to provide water for sheep in summer, but just as soon as the winter snows arrive the sheep thrive thereon wonderfully well and the desert is transformed into a scene of animation. This range, aside from the railroad lands, is without charge to the flockmaster.

The United States land office for this county is located at Evanston, except for a few townships in the eastern portion of the county, which are in the Cheyenne land office district.



GREEN RIVER.

SUTHERLAND
DENVER



SHERIDAN, COUNTY SEAT OF SHERIDAN COUNTY.

Uinta County

Uinta County was organized in 1869, and was named for the Uintah Indians. It lies in the extreme western portion of the state and extends from the northern boundary of Utah to the southern boundary of the Yellowstone National Park. It covers over 15,000 square miles, and much of this vast area is unentered government land. The Union Pacific railroad crosses the county in its southern portion, and the Oregon Short Line in the south central portion. The elevation ranges from 5,000 to 8,000 feet.

Topography.—The county is characterized by a charming alternation of wooded hill and arable valley, of rolling upland pasturage and well drained meadow. Some parts of the county are very mountainous, but broad extents of valleys and plateaus blend with the hills in charming and picturesque beauty. The mountains are cut by a number of swift rivers running through deep canons, and the valleys are threaded by the numerous forks and tributaries of these rivers. Fair lakes are embosomed in the hills and feed great rivers and streams.

Streams.—The rivers of the county are the Bear, Green, Salt and Snake. The principal tributaries of Bear River are Black's Fork, Twin Creek and Smith's Fork. Those of the Green are Horse, Cottonwood, the three Piney Creeks, La Barge, Fontenelle and Henry's Fork Creeks. Those of the Snake are Buffalo Fork, Gros Ventre and Hoback's Rivers from the eastward, and John Day's and Salt Rivers from the south.

Besides the lakes and rivers, there are about forty named creeks of considerable size traversing the surface of the county.

Statistics.—Lands and improvements are assessed at \$1,797,666; total assessed valuation of all property, \$5,747,805.31; rate of taxation, state and county, 19 mills; county debt, \$99,500 (bonded); number of schools, 69; teachers, 81; districts, 21; school children between five and seventeen years, 4,408; population, census of 1900, 12,223; present population, about 16,000.

Principal Towns.—The county seat is Evanston; population, 2,110. It is pleasantly situated in the Bear River Valley; has many natural advantages, and is one of the most progressive and attractive towns in the state. It is the home of

prosperous merchants, cattlemen and sheepmen. Union Pacific shops are located here, and there are two banks, two newspapers, five churches, commodious brick school house, large court house and jail, electric light plant, waterworks and three hotels. The State Insane Asylum is situated here and also the United States land office for Evanston district. Diamondville, Kemmerer, Cokeville and Cumberland are the principal towns on the Oregon Short Line, and are large coal producers. The coal of Uinta County is but slightly exposed, being largely covered by the tertiary; and it is only where recent erosion has occurred that the coal outcrops. Owing to this fact, it may be years before the full extent of the coal lands of Uinta County is thoroughly known. The output is extensively used by the smelters of Montana, the railroads of Utah, Idaho, Oregon, California and Nebraska, for which purposes it is admirably suited.

Star Valley, a fine agricultural section, 125 miles distant from the county seat, is traversed by Salt River, Cottonwood Creek, mountain streams and many large canals and laterals. The population is about 3,000. The people, mostly Mormons, are thrifty and prosperous. They raise timothy and alfalfa, hay, oats, barley and winter wheat, large crops of potatoes and garden truck, and in agricultural wealth and splendid ranges for cattle, rival the people of the southern end of the county. In this beautiful valley several creameries have been established, and their products have become famous throughout the west. They not only supply the local demand, but ship butter and cheese to Butte, Anaconda, Helena and the cities and towns of Oregon and Washington.

There are many thousand acres of good agricultural land open for settlement under the homestead and desert entry laws of the United States. This land is admirably adapted for the cultivation of hay and small grain crops, and there is an abundance of water for irrigation purposes. Settlers would be welcomed, and there are good opportunities for those who have a little capital, as good land already brought under cultivation can be purchased for from four to ten dollars per acre. School, road and mail facilities are already well established, and railroad communication is easy of access.

This county has developed wonderful oil fields. (See article on Oil.)

The famous Jackson Hole and Jackson Lake lie in the northern part of the county, south of the Yellowstone National Park. Jackson's Hole was named in 1828 after David E. Jackson, a wealthy partner of the Rocky Mountain Fur Company. Jackson Hole is an extensive valley of fertile land and

some good farms, and is traversed by Snake River and numerous creeks. Prior to 1871 Jackson Hole was practically unknown to others than the hardy trapper and prospector, and it was not then supposed that this great valley would one day become an important part of the body politic of the State of Wyoming, and that magnificent farms and homes would cover its fertile expanse, or the range of the wild game, in its last retreat before the perpetual blow of the advance of civilization. The soil of Jackson Hole is a rich sandy loam, and while the principal crops produced are native hay and tame grasses, vegetables and small fruits mature and are raised in sufficient quantities to supply all local demand. All kinds of cereals will mature, and while the approximate elevation of the valley is 6,200 feet above sea level, the surrounding mountains protect it from the killing winds and insure its becoming one of the future agricultural districts of the state. The stock interests consist entirely of cattle and horses. Owing to the location and conditions surrounding it, the valley is not a good place for sheep. Stock is generally fed and sheltered during the more inclement part of the winter. Hay in great quantities is raised and is worth from \$2.50 to \$3.50 per ton. A ton of hay will feed each head of grown stock. Ranchmen following the cattle business have without exception become well-to-do, building large irrigation canals, comfortable residences and large barns for the shelter of their stock. Improvement is everywhere evident, and for a new community Jackson Hole has as many valuable ranch improvements as any other new community in the state.

Prospects have been found that indicate that there is mineral in the vicinity of this valley. Since 1860 the bars on the Snake River have been worked for placer gold, and good wages can be and are now obtained by sluicing or rocking the gravel. Where the gold comes from has never been determined; that it is there is beyond question. Coal beds of vast dimensions and superior quality lie on the east side of the Gros Ventre River. (See article on Game and Fish.)

Soil.—The soil is of three distinct classes: First, the bottom or meadow lands, usually possessing a rich, black and somewhat heavy soil, lying next to the streams, always easily irrigated, and on that account generally the most desired by settlers; second, the bench lands, rising terrace-like toward the neighboring hills, possessing as a soil a warm, sandy loam, always easily drained, usually presenting no great obstacle to irrigation, and now being generally recognized as the soil capable of the widest range of production; third, the high bluff lands, watered by numerous streams, usually too sandy

for cultivation, but naturally affording the most ample and nutritious pasturage for horses, cattle and sheep.

Climate.—The winters are not severe, and the summers are always temperate. Clear, frosty days, with an occasional exceptionally cold night; usually severe weather in March; some very warm days in summer, but always cool and reviving breezes in the night.

Agriculture.—The production of timothy and wild hay, alfalfa, oats, potatoes, winter wheat, and in some sections barley, occupy the whole attention of Uinta County farmers. Possessing a soil singularly fertile and lasting, this county offers exceptional inducements to the agriculturist, with the assurance that the waters will never fail, that his crops will never be blighted by drought, and abundant harvest will surely follow seed time.

Timber.—Throughout the county timber is abundant on the hill sides for lumber, fuel and mining purposes. Yellow and white pine, some cedar and spruce, cottonwood and aspen, are the principal growths. Saw mills are in operation in many portions of the county, and much lumber is produced.

The United States land office for this county is at Evanston.

Weston County.

Weston County was organized in 1890, and was named after a gentleman of that name, who was interested in building the Burlington railroad through that section of the state. It is 100 miles long by forty-eight miles wide, comprising 3,133,440 acres, and has a population of 3,203. The total assessed valuation of all kinds of property in 1904 was \$1,862,842.34, divided as follows: Farm lands and improvements, \$316,046.36; town lots and improvements, \$118,301; cattle, \$559,337; horses, \$98,151; sheep, \$287,894.30. County indebtedness, \$33,820; rate of taxation, 19 $\frac{3}{4}$ mills.

Weston County, although enjoying an altitude between 4,000 and 5,000 feet above the sea level and possessing good soils, is not so well watered as other sections of the state, owing to the absence of large streams having their sources in the lofty mountains of the snowy ranges. The rainfall, however, is considerably greater than at a higher altitude, averaging from eighteen to twenty inches per annum. The dark, loamy soils, in part of the county, are quite productive

without irrigation, and the reddish gypsum soils found at the base of table lands retain the moisture and are very fertile. Precipitation is mainly in the spring and early summer, and crops make rapid progress from germination to maturity. Wild fruits of the smaller varieties, such as plums, gooseberries, currants and strawberries, grow plentifully. All the farm products known in the northern latitudes are produced in this region, even Indian corn, and the yield is most excellent. Wheat of the spring varieties yields over fifty bushels, rye over forty, oats seventy to even one hundred bushels, and corn, of the flint, dent and squaw varieties, also makes good returns. Timothy, alfalfa, red clover and other tame grasses are cultivated with success, as are also potatoes, rutabagas, turnips, carrots and sugar beets, the last named producing as high as six tons per acre, with twenty per cent of sugar, as shown by analysis. Stock growing makes an excellent accompaniment of farming throughout this region. Shorthorn, Hereford, Sussex and West Highlands cattle find favor for the range. Horses also receive much attention and are increasing in value. There is good pine timber in the Black Hills, and numerous saw mills supply the wants of the settler. Gypsum is found in inexhaustible quantities, and superior quality of building stone, granite and lime. Salt producing springs have been discovered near Jenney's Stockade, and an oil district in the same locality covers over 400 square miles. (See article on Oil.) Weston County is famous for its coal, which finds a ready market in the adjoining states of South Dakota and Nebraska, and along the line of the Burlington railroad, which traverses the entire length of the county, east and west.

Newcastle, the county seat, is a thriving town. The first building was erected in September, 1889, the Burlington railroad having reached that point in the previous month. After the discovery of coal the population grew very rapidly, and in 1900 was 756. In 1890 extensive waterworks were constructed at a cost of over \$100,000 by the Cambria Mining Company, which furnishes an abundant supply of water for Newcastle, Cambria and the great coal mines. A \$6,000 town hall and \$12,000 school building have been erected. Within the immediate vicinity are several oil wells, the first discovery being made fifteen years ago. Salt wells have been opened in the vicinity of Newcastle, and promise to develop into a large and profitable industry. All lines of business are well represented and prosperous.

Cambria is a coal mining town, the population being actively engaged in that industry. The quality of coal mined

is excellent, and is described elsewhere in this publication. Modern equipment and methods are the characteristics of the mining plant. The coal here is of a coking quality, and coke ovens are in operation. The population of the Cambria district is 962.

The United States land office for this county is located at Sundance.

Yellowstone National Park,

The Wonderland of America.

If all the other resources of Wyoming could fail, it would still be known to the world through the Yellowstone National Park.

The park was discovered by John Colter in 1807, but its final disclosure to the world was the work of three exploring parties in the years 1869, 1870 and 1871. It was finally reserved as a national park by act of Congress in 1872. It lies in the northwest corner of Wyoming; is sixty-two miles long by fifty-four miles wide. Its government and control is under the special authority of the federal government.

The scenery of the park is not equaled by anything in the world. It is too grand, its scope too immense, its details too varied and minute, to admit of even an attempt at its description within these pages, for nearly every form, animate or inanimate, in dream or fancy, ever seen or conjured by the imagination, may here be seen. Its colors and blended tints baffle the artist's brush, and language is inadequate for its portrayal. It is here in this vast solitude that one stands in silent awe and hears the deep diapason of nature's mightiest and most mysterious anthem as it swells in thunder tones or sinks into sweetest, softest melodies. Here, too, is found much that is chastely beautiful, hidden away in some dim-lighted alcove or bower, while all about is the grim-visaged and towering strength of the silent mountain sentinel. The eye is never weary, for the scene is ever shifting, ever becoming more and more grand, imposing and impressive.

Placed as it is upon the very apex of the continent, its seasons are "July, August and Winter." In the summer, July and August, the long-imprisoned vegetation bursts into full life and beauty, and in this short period occur the changes which require months in lower altitudes. The average snow-fall, from November to April, is ten feet.

The tourist season lasts from June until October, and nowhere can be found a more delightful summer climate. Every year shows an increase in the tourist travel to this region, which the government so wisely controls and protects for the enjoyment of the public. The park can be reached by wagon routes, which make very pleasant camping trips through beautiful and diversified scenic country. Probably the most picturesque route is from Cody on the Burlington and Missouri railroad, from which point a new road has been constructed by the government. This trip is fifty miles long, and can be made on splendid tally-ho coaches managed by Colonel Cody (Buffalo Bill). Tourists can stop over mid-way and rest and fish for the speckled trout, and also make side trips into the famous Jackson Hole country. The scenery on this route equals, if it does not surpass, anything in the Alps. Guides and camping outfits can be obtained at Cody. This makes a very pleasant method of seeing the park.

The park can also be reached from Rawlins on the Union Pacific railroad through the Shoshone Indian Reservation; also from Casper on the Fremont, Elkhorn and Missouri Valley railroad through the Indian Reservation. By wagon this makes a delightful trip, passing nearly all the way through a country of wonderful scenery and abounding in game and fish. The government has expended \$40,000 in making this route an enjoyable one for the park visitor.

Many visitors choose a northern entrance, coming by way of the Northern Pacific to Livingstone on the main line; thence a branch road fifty miles long drops almost directly south to Cinnabar, Montana, eight miles from Mammoth Hot Springs, Wyoming, and Fort Yellowstone, where the itinerary of the tourist choosing this route commences.

The trip as planned by the Yellowstone Park Transportation Company occupies five days, and includes the main points of interest, but each hotel may become the center of enjoyable side trips, if the visitor has time and means to tarry.

The Union Pacific and its branch, the Oregon Short Line, bring the travel to Monida, a station on the boundary of Montana and Idaho. Here he exchanges the Pullman for the modern Concord coach, which the Monida and Yellowstone Stage Company has in readiness for him. Although a day's ride from the boundary of the park, a tourist is seldom found who cares to forget that first day's coaching. The invigorating air, the ever-changing view of mountain and lake, good horses, a good driver and good meals at every station, combine to drive into the background the cares of his workaday life. This route connects with the belt line at the Fountain Hotel in the Lower Geyser Basin.

All stage lines are equipped with the best and most modern coaches. Necessary hand baggage is carried, and trunks are stored free of charge. Parties coming in by one route and desiring to leave by the other may have their baggage transferred without cost.

Hotel rates are four dollars per day. There are four modern hotels, with electric light, baths and telegraphic communication with all parts of the world. These are so situated that coaches reach them before an early dinner hour and leave after breakfast. The midday meal is procured at lunch stations conveniently placed between the hotels.

The Wylie Camping Company furnishes still another way of doing the park. It stands in about the same relation to the two just described that an accommodation train does to the Pullman flyer. One travels the same road and has the same views, but from a two-horse spring wagon instead of a four-horse Concord coach. He sleeps in a tent, dines from a camp table, and pays thirty-five dollars for his week in the park.

Last of all comes the independent camper, who cooks his meals in the geyser wells, finds plenty of suitable camping places, and may have a very good time with small expense, if he is careful to quench his camp fire, and keeps his dog tied under the wagon, or, better still, leaves him at home.

The government has spent \$40,000 in the construction of wagon roads leading from the south and east; the former from Fort Washakie to Jackson Lake, directly south of the park. From this point a good road connects with the belt line at Yellowstone Lake. The traveler taking this route passes within the shadow of the Grand Teton and along the margin of Jackson Lake, a combination of water and mountain scenery unsurpassed for grandeur and beauty.

As the United States has sole and exclusive jurisdiction over the park, its protection and improvement are under the direction of government officers. Fort Yellowstone, located at Mammoth Hot Springs, is a two-troop cavalry post. The commanding officer is the acting superintendent of the park. The United States Commissioner, who has civil jurisdiction of all crimes and offenses committed within the park, is stationed here. There are also ten outposts throughout the park, at each of which are stationed a non-commissioned officer and a small squad of men, who patrol the entire area of the park both summer and winter.

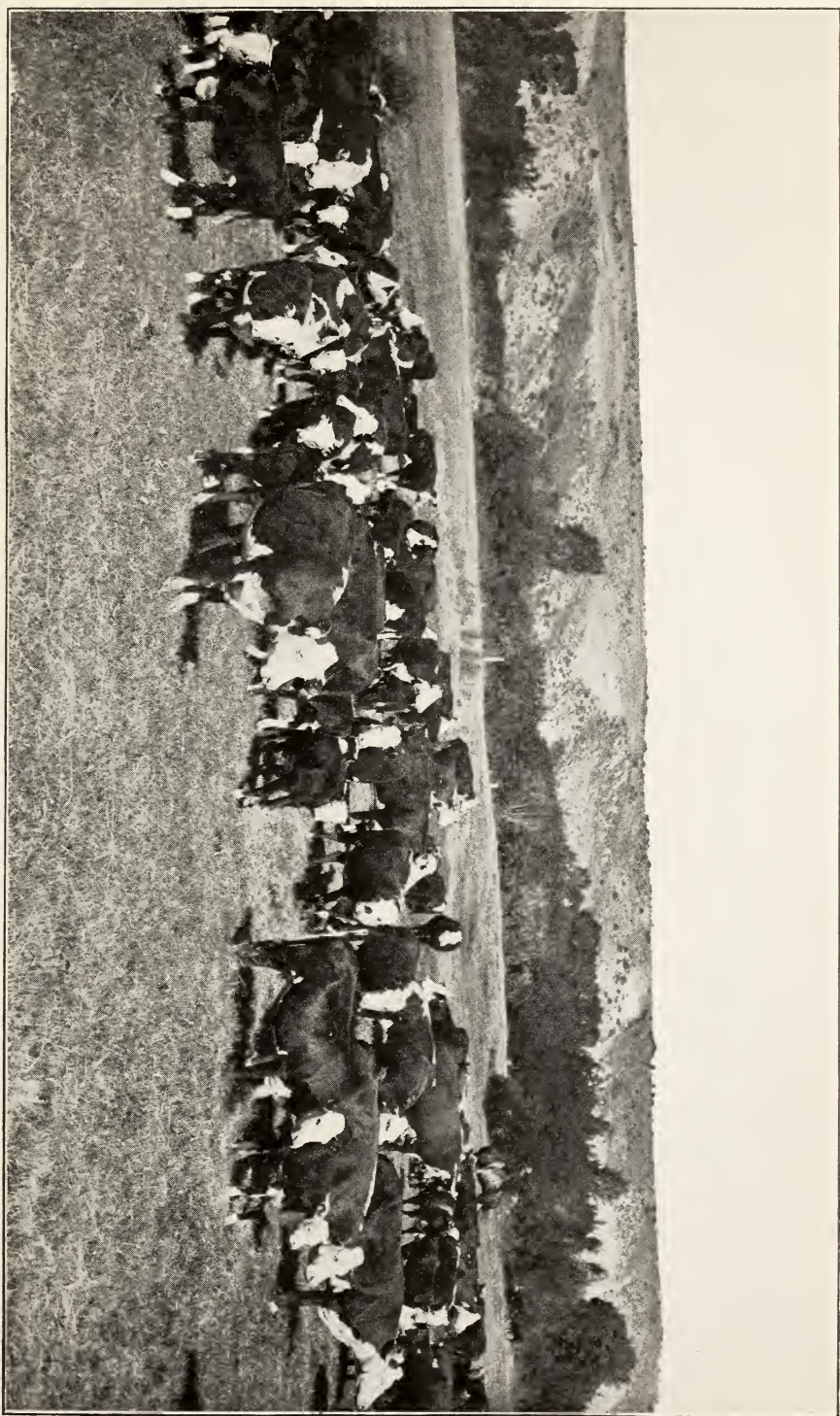
All roads are constructed and kept in repair at the expense of the government. The road leading south from Mammoth Hot Springs at Norris Geyser Basin, twenty miles from Mammoth Hot Springs, intersects the belt line, which describes a



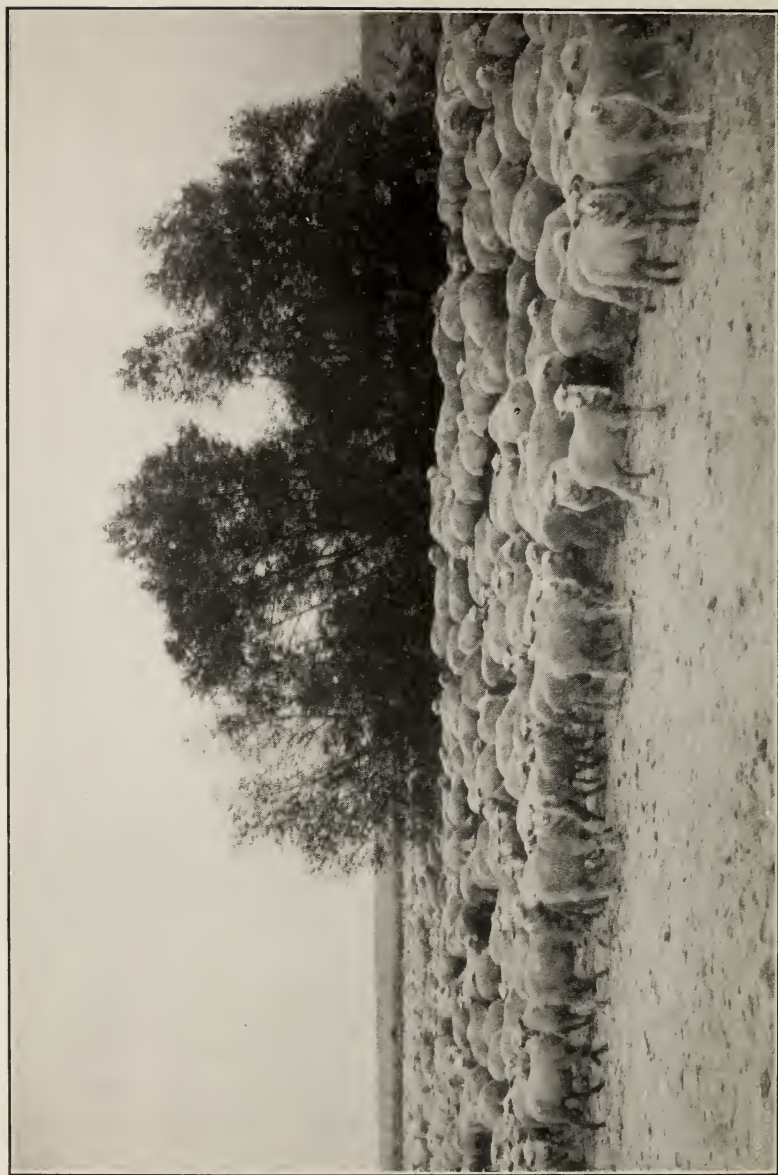
A. M. W. & S. Santa Clara



TWO WYOMING INDIAN CHIEFS OF RENOWN.



A Uinta County Herd of Herefords



A BAND OF NATRONA COUNTY FAT LAMBS.

circle of one hundred miles, and upon which is situated nearly all the most prominent points of interest. Twenty miles of the one hundred can be covered by steamer across Yellowstone Lake, if the traveler so elects, for an extra fare of three dollars.

The English language is rich in adjectives, and all have been brought into service, but failed to picture the park. In spite of the attempts of the word painter, it has not been described. Each one must see for himself to appreciate the generosity of Mother Nature, who has planned entertainment for every mood of every character. The poet may find his theme, the artist an inexhaustible supply of studies, the scientist a rich field for work. The lover of the grotesque will linger in the hoodoos. The mud geyser will satisfy a craving for the horrible. Spluttering pools and boiling springs will testify that the stokers of the lower regions are never off duty. The geysers bear a family resemblance to one another, but each has an individuality in cone and action. The Grand Canon, with its many-hued walls, might alone invite the world to be its guest. Fish are waiting to be caught, but deer and other game seem to realize that they are the wards of the government, and only pose for the admiration or the camera of the visitor. Bears never fail to furnish the after dinner amusement at the hotels.

Live Stock.

The live stock industry of Wyoming, which for a long time was its only industry, has a history as varied and romantic as a Sixteenth Century tale. When the country now comprised in this state was first discovered a luxuriant grass covered the prairies, upon which nothing but buffalo and wild game grazed. Her first herds were gathered and reared by men who preceded the first attempts at actual settlement of the territory. Lying in the pathway of that great migration to the Pacific coast, which began in the middle of the past century, her territory was necessarily traversed by countless long trains of ox teams, many of which, through accident or disease, were destined never to reach their journey's end. Sick, injured, footsore and poor, these animals were abandoned to live as best they might, or become a prey for the wild animals of mountain and plain. That many of them lived through the winter following and were fat enough for beef in the early springtime proved a revelation to the man accustomed to long

and expensive winter feeding, and forced his attention to the fact that our mountain grasses must possess nutritious qualities of marvelous worth. To raise cattle, horses and sheep was, for our earliest settlers, an easy matter, but to keep them was quite a different proposition, for the Indian had little respect for the rights of ownership, and no horse was safe beyond the reach of a bullet from his owner's trusty rifle. When the white man came to stay he brought vast herds of cattle that thrived on the strong and nutritious grasses of the open range. Fast following these early days of settlement, of danger and accumulation, came the "boom" in the cattle business during the '80s, marked by the investment of millions of dollars by men who knew nothing of the business in which they so recklessly embarked. The period of unwarranted speculation, fancy prices and extravagant waste was of short duration, and, naturally enough, was followed by rapid depression of prices and the consequent failures of the inexperienced.

Following this appeared the ranchmen of moderate means, having smaller herds of cattle, who had learned from bitter experience that feed must be provided for severe winters. Thus ranches were settled and irrigated—alfalfa, hay and other feed provided—rendering the business that was formerly so precarious a safe and steady avocation, and one that is rapidly giving our people wealth and independence.

The live stock industry has been the most remunerative business of this section of the west; mining and agriculture are fast becoming close competitors. As to which branch of the business—cattle, sheep or horses—one should adopt, no advice can be given. One should follow that for which he is best adapted. Large fortunes and many comfortable competencies have been and are being made in each branch.

CATTLE.

This great industry, combined with farming, offers splendid opportunities for profitable investment. Today cattle are successfully grown in every section of the state.

We still have forty million acres of free government range upon which our farmers graze their herds, and doubtless over half the cattle in Wyoming are run on this open range during the entire year; although our stock growers generally appreciate the importance of winter feeding and are rapidly increasing hay and grain production.

Wyoming can grow better beef at less cost than almost any other section, for the reason that land values are very low as compared with other states. And there is ample free

range upon which the cattle graze over half the year; moreover, alfalfa, hay and oats combined form a perfect ration for the correct and complete development of bone, muscle and flesh, while our natural buffalo grass and bluestem hay excel the famous bluegrass of Kentucky. Under irrigation, these can be quickly and cheaply grown, while our cloudless summer skies permit us to harvest these crops so as to retain all nutritive properties.

Blood and feed, combined with ideal natural conditions, in a land where disease is unknown, enable us to defy the world in breeding live stock. Our winters are dry and mild, and in most sections cattle graze in the open fields during the entire season.

All "beef" breeds do well and show marked improvement in this high altitude. Many pedigreed herds could be established here successfully, while experiments made by our more progressive ranchmen have demonstrated conclusively that steers can be hay-fed and matured during the winter with great profit.

Dairying is also a paying branch of the cattle industry.

SHEEP.

Since 1883 the sheep industry has grown enormously, and many heretofore poor men have become rich, some owning as many as 65,000 head. Sheep are grazed in the mountains in the summer, and in the winter upon the plains, where they find the cured grass, as Nature provides it, together with the browse furnished by the sage brush. A sheep man needs no ranch and makes no preparations in the way of harvested feed for the winter, but, like Abraham of old, moves about with his flocks, in the summer living in tents in the cool shades of the mountains, and in winter in a "sheep wagon," which is fully equipped with spring bed, stove and kitchen outfit. Sheep are subject to no disease except scab, which is easily cured. The wool, at fifteen cents per pound, a little more than pays all the cost of running the sheep a year, so that the increase and mutton are the accumulated net profit.

Wyoming leads all the western states and territories in the price per head of its sheep, and leads every state in the Union in total value of its sheep, the number and value of its lambs, and the amount and value of its wool clip, and the average weight of fleece produced.

As the sheep have multiplied and the free range diminished through settlement and segregation, our flockmasters have been keenly alive to the importance of improving the quality of the wool and the necessity of early maturity in mutton; hence we now find the lambs going to market in

an ever-increasing flood, while winter feeding of lambs is rapidly becoming an important branch of the sheep industry. Lambs are fed on alfalfa hay, together with grain of some sort or peas, and in one hundred days of winter feeding made to weigh eighty to ninety pounds. Mutton so produced is considered by epicures the best in the market. Sheep on the open range seem to stand more severe winter weather than cattle. Nevertheless, it is only a question of a few years until our flockmasters must expect to feed some hay or grain during the winter. Fortunately, the great government irrigation projects now under way will doubtless be completed in time to supply this growing demand.

HORSES.

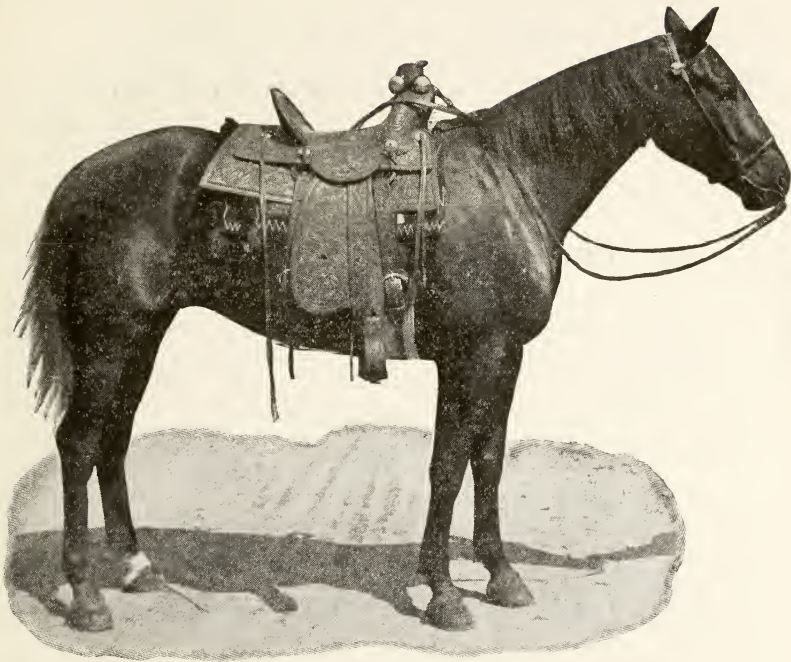
It has been proven beyond question that horses raised on the foothills and mountains, in the pure light air of an elevation of from 5,000 to 10,000 feet, have better lungs, stronger and better developed bone and muscle, and tougher hoofs, than horses from any other country. This is borne out by the fact that not only the United States Government, during the Spanish war and since, but the English Government, for service in South Africa, have purchased as many thousand head of horses in Wyoming as could be obtained.

No horse in the world can compete with the Wyoming horse in endurance of all kinds of hardship to which horse flesh is subjected by man. This is a broad statement, but we make it without fear of refutation; every horseman and horse in the state stands ready to back it up.

Embracing about 98,000 square miles of territory, nearly every acre of which is clothed in a mantle of the most nutritious grasses and sage brush browse, Wyoming presents a territory for grazing purposes 40 per cent larger than is found in all the eastern states combined. Add to this vast food supply the most delightful climate in the world, with cool summers and dry, mild winters, and it is but little wonder that Wyoming has been called the "Stockman's Paradise," and that it has become an important factor in supplying beef, mutton and wool to the eastern and western markets.

The requisites for success in the business are a few cattle, sheep or horses, and attention to their wants under the conditions of the country and climate. The man who can do this for a few years will, with common prudence, find himself independent of the world, and his old age may be spent in peace and with plenty.

The cut on opposite page is a picture of "Wyoming," the horse presented by the City of Douglas to President Roosevelt when he made his famous sixty-mile ride during his visit to the state in May, 1903.



"Wyoming," the Horse Presented to President Roosevelt.

This horse, taken from the range, is a marvel of equine intelligence, is possessed of five different gaits, and is a swift and easy traveler. The horse is now in the White House stables in Washington.

Wyoming horses are unexcelled.

SWINE.

Swine do remarkably well in our state, hog cholera being unknown, and it is said that young shoats born in our high altitude are not liable to contract the disease when shipped east to be finished on corn. Swine do well the year round on alfalfa. In the summer they are turned in to the green alfalfa fields and in the winter fed on the dry hay. The best of pork can be produced very cheaply on a combination feed of alfalfa, roots, small grain or peas.

Today Wyoming imports a large proportion of the salt pork, bacon and ham consumed by her citizens, amounting to tens of thousands of dollars' worth each year. The freight rate from the eastern market is very high, and this meat could be produced in Wyoming with great profit.

Public Lands and Irrigation Projects

And the Laws Under Which They Are
Being Administered.

GOVERNMENT RECLAMATION SERVICE.

In the arid states the people are of the opinion that they will derive greater benefit during the next decade through the operation of the act of Congress approved June 17, 1902, than through all other agricultural channels. Wyoming takes particular pride in this act, for the reason that its congressional delegation was the great moving force in securing its enactment. In season and out of season its representatives in the halls of Congress have advocated the reclamation of the arid lands of the mountain states, and the reclamation act is the result of their tireless efforts.

Under this law all the moneys received from the sale of public lands goes into a fund for the building of reservoirs and canals for the storage of water and the irrigation of lands. More than twenty-seven millions of dollars have already been placed to the credit of this fund, and numerous projects have been entered upon by the Geological Survey, the Bureau of the Department of the Interior having direct charge of the work.

Wyoming has not been neglected. For two big enterprises, the Secretary of the Interior has set aside \$3,250,000—\$2,250,000 for the Shoshone project and \$1,000,000 for the North Platte project. For the information in this chapter relating to these projects, we are indebted to Mr. John E. Field, engineer in charge of the reclamation work on the North Platte River, and Mr. Jeremiah Ahern, engineer in charge of the work on the Shoshone River.

It may be safely stated that there will be expended in this state by the federal government during the next decade fully ten millions of dollars. This vast sum will mean great prosperity to many people. The men who will take up the land under the big reservoirs and canals will undoubtedly be given an opportunity to perform a great deal of the work in constructing the dams and ditches. In this way they will be enabled to maintain themselves during the entire building period, and at the same time they will find opportunity to improve their homesteads.

NORTH PLATTE PROJECT.

This project contemplates, first, the building of the reservoir on the North Platte River, fifty miles above the town of Casper. The river will be dammed at a point three miles below the mouth of the Sweetwater, the location being a granite canon, about 200 feet deep, 80 feet at the bottom and 175 feet at the top. The dam will be of masonry, and the area covered about 22,000 acres, the capacity being one million acre feet. The entire flow of the Platte River at this point passes through the reservoir and can be stored. The stored water will be turned loose and allowed to run down the river to the headgates of the several ditches under contemplation, thus giving assurance of an ample supply of water at all times.

The Chicago and Northwestern railway reaches Casper from the east, which line may be reached over the Colorado and Southern railway from Cheyenne.

The wasteway will be over the granite ridge at both ends of the dam, no water being allowed to flow over the dam. Power may be developed here whenever necessary. The elevation of the reservoir is about 5,800 feet above sea level.

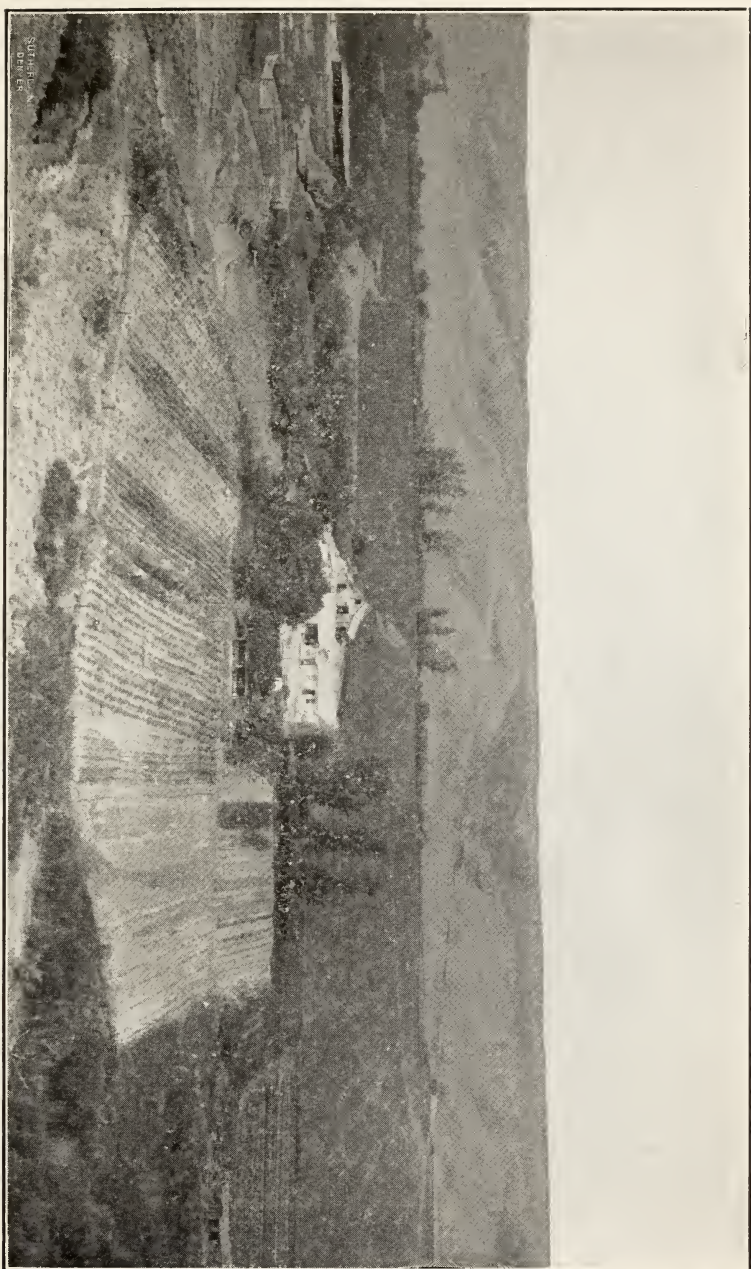
Canals.

The first canal, contemplated below the reservoir, heads about eight miles above the town of Casper, on the south side of the river, and extends easterly to a point about opposite Douglas, Wyo. The amount of land under the canal is about 30,000 acres. Preliminary surveys and estimates only have been made. These estimates show that the cost of reclamation will probably exceed \$25 per acre. Most of the land is in private ownership. The second canal is on the north side of the river, heading about opposite Glenrock and extending to Orin. It controls about 20,000 acres. The cost will probably be in excess of \$25. Most of this land is in private ownership. Preliminary surveys only have been made.

The Groshen Hole Canal heads at the town of Guernsey, where a diversion dam 100 feet high is necessary. The length of the canal will be about 140 miles, of which six miles are in tunnel. The area of land covered is about 150,000 acres, a large part being public land. The cost of reclamation has not been definitely determined, but it will probably be in the neighborhood of \$35 per acre. The feasibility of the canal has not yet been passed upon, further investigation being necessary.

Fort Laramie Canal, heading about eight miles above old Fort Laramie, on the south side of the river, covers some 50,000 acres, about equally divided between Wyoming and Nebraska. Twenty-five thousand acres are included in the estimate of the 150,000 acres under the Goshen Hole Canal. Preliminary surveys only have been made, but the indications are that the project is feasible.

The Interstate Canal heads at the same point as the Fort Laramie Canal, namely eight miles above old Fort Laramie. There will be a diversion dam of concrete, 300 feet long, raising water ten feet above the bed of the river. This canal will be an enlargement of the Whalen Falls Canal. About 20,000 acres lying under the canal will be irrigated by the Whalen Falls Canal Company. It is expected that the water will be available for this land in the summer of 1906. Contracts for the first forty-five miles of this canal were let May 16. This first forty-five miles carries the canal nearly to the state line, and it is expected that the contract for the next fifty miles of canal will cover some 10,000 acres in Wyoming and some 50,000 acres in Nebraska, almost all of which is public land. The canal, when completed, will cover probably 100,000 acres of land, and it is hoped that it will extend as far east as Bridgeport. The cost per acre will probably not exceed \$35. The Whalen Falls Canal has a priority calling for 280 cubic feet per second of water, but has no reservoir right. It is proposed to build all the laterals from the main canal, reaching practically every farm area. These farm areas will probably consist of eighty acres of good arable land, the homestead entry being limited to that amount. It is also proposed to build other canals on both sides of the river in Nebraska, probably by the extension of existing canals. This matter has not been investigated, but it is hoped to bring 50,000 acres more under cultivation by this means. The area to be irrigated, especially that in Nebraska and in the Goshen Hole, is comparable with land in and about Greeley, Colo. The elevation is about 4,000 feet and the rainfall about thirteen inches per annum. The character of the soil is a sandy loam, with little alkali and little adobe. The Burlington railroad runs the entire length of the Goshen Hole and Interstate Canal lands. It is some 500 miles from Omaha and some 250 miles from Denver. The prevailing winds are from the northwest, the maximum velocity for 1903 being forty-five miles per hour. The mean temperature was about 45°, with a maximum of 98° and a minimum of 20°. Humidity, 66%. The evaporation over the area to be irrigated is about the same as for Eastern Colorado. Corn is successfully grown, frosts seldom interfering with its maturing.



IRRIGATED RANCH, JOHNSON COUNTY.

SIDON CANAL,
LOOKING
UP STREAM FROM
A POINT
ONE-FOURTH OF A
MILE BELOW
HEADGATE.



Agricultural Possibilities.—The value of the non-irrigable land is from one to five dollars per acre. The value of irrigated land from forty to seventy dollars per acre. Alfalfa is the principal crop of the region, though oats of superior quality are grown extensively. Throughout the district in Nebraska and the Goshen Hole sugar beets and potatoes will form the principal crop for intensified cultivation. The crops are about as follows:

Alfalfa, three crops, four to six tons per acre.

Sugar beets average about fifteen tons per acre.

Potatoes, 200 bushels.

Oats, 60 bushels.

Corn, 40 bushels.

Wheat, 35 bushels.

The domestic water supply is good, water being obtainable at almost any point by wells 200 feet or less in depth. Sugar beet and starch factories will probably be built when the district is settled. The ranges surrounding the district will furnish sheep and cattle to be fed on the farm products. Good grazing land lies to the north, south and west of the district. The fuel supply is obtained from Northern Colorado and from Sheridan and Hanna, Wyo. Coal sells from five to seven dollars per ton.

Markets.—Agricultural products will probably find their best markets to the west for feeding in winter. The price of alfalfa per ton during the last year was \$4; potatoes, 40 cents per bushel. This was very low, due to the big yield in other sections. Beets should bring \$5 per ton and wild hay \$12. Oats sold for \$1 per cwt. The market for cattle and sheep would be Denver, Omaha and Kansas City.

Supply Markets.—Supplies are obtained from Omaha, St. Joseph, Kansas City and Denver. The cost of provisions is somewhat higher than in Denver, though with an increase of consumption the prices would be practically the same.

SHOSHONE PROJECT.

Works Proposed.—The storage reservoir will be on Shoshone River, in Township 52 North, Range 103 West. It includes the lower portions of the North and South Forks of the river. Capacity at proposed flow line, 230 feet above bottom of river channel, 456,0000 acre feet. Area of flooded area, 6,600 acres. Mean depth, 69 feet.

The storage dam is located at the head of Shoshone Canon, in Section 7, Township 52 North, Range 102 West. It will be seventy-five feet long at bottom of river channel, 200 feet long on top, and about 300 feet in height above its

foundation, which is about sixty feet below the bottom of the river channel. It will be an arched dam of concrete. Wasteway will be 250 feet in length and connecting with a tunnel through the granite wall, which will discharge the surplus water into the river bed below the dam.

There will be two outlet conduits, leaving the reservoir at ten feet and sixty feet, respectively, above the bed of the river. The one leaving the reservoir at the elevation ten feet will be a tunnel ten feet by ten feet in cross-section, 500 feet in length, and will discharge the water, which will be controlled by suitable gates, into the river channel below the dam, from which point it will flow down the channel to the lower diversion point near Corbett, a distance of sixteen miles. The upper conduit will be divided into four sections. Section 1 will be six feet by seven feet through granite, 3,230 feet in length, grade 2.64 feet per mile, capacity 500 second feet. Section 2 will be a tunnel through granite and sandstone, 2,593 feet in length, and will have the same cross-section, grade and capacity as Section 1. Between Sections 1 and 2 suitable waste gates will be placed. The water in Sections 1 and 2 will be under pressure from the reservoir. Section 3 will be an open cut, fourteen feet wide on the bottom; side slopes, $1\frac{1}{2}$ to 1; depth of water, 7 feet; grade, 2.112 feet per mile; length, 3,000 feet; capacity, 500 second feet. Section 4 will be a tunnel through limestone, with concrete lining; cross-section, 8 feet by 8 feet; grade, 7.92 feet per mile; length, 8,660 feet; capacity, 500 second feet. At the end of this section the conduit reaches the upper portion of the irrigable land.

Canal Lines.—High line starts from lower end of outlet tunnel. Bottom width, 26 feet; depth, 6 feet; side slopes, 1 on 2; grade, 1.056 feet per mile; capacity, 500 second feet; length, 22 miles. Will irrigate 20,000 acres. At Eaglenest Creek it will be divided into three main laterals for irrigation of 20,000 acres north of Ralston. Low line canal heads in Shoshone River, sixteen miles below the dams site, or near Corbett station. A low diversion dam will be built. The first section will be a tunnel three and one-half miles long through sandstone and shale and will be lined. Water section will be 10 feet by 10 feet; grade, 6 feet per mile; capacity, 1,000 second feet. Below the tunnel the water will enter the main low-line canal, which will extend to Frannie, a distance of forty-two miles, irrigating 80,000 acres. For ten miles the section of the canal will be: Bottom width, 38 feet; depth, 7.5 feet; side slopes, 1 on 2; grade, 1.056 feet per mile; capacity, 1,000 second feet. Below this point the canal will be gradually decreased in size.

The area of the reclaimed land will be about 120,000 acres. Cost per acre, \$30. Practically all this land is public domain, and is, therefore, subject to the conditions of the reclamation act. The farm unit has not been determined.

Roads.—A wagon road from the lower end of Shoshone Canon to the damsite, a distance of four miles, is being built. The road will be extended around the reservoir to replace the portion of the road between Cody and Yellowstone Park, which will be covered by the reservoir.

Location.—Big Horn County, Wyo. Latitude, from 44° 30' to 45° 0' N.; longitude, from 108° 30' to 109° 20' W. Townships 52 to 58 North, Ranges 96 to 103 West, 6th Principal Meridian. The town of Cody is in the upper portion of this tract. The Cody branch of the Burlington railroad traverses the tract. Distances by rail from Cody via Burlington railroad:

To Omaha, 982 miles.

To Chicago, 1,461 miles.

Topography.—Irrigable lands are gentle rolling bench lands; elevation, 4,000 to 5,000 feet. The drainage area above Cody is 1,480 square miles; above the damsite, 1,380 square miles. It includes the eastern slope of the Continental Divide in Yellowstone Park; elevation, 10,000 to 12,000 feet. The major part of the drainage area is in Yellowstone Park and the Yellowstone Forest Reserve.

Climate.—Rainfall, from 8 to 16 inches. Run-off at Cody during 1903 was 1,027,900 feet, or 13 inches. Prevailing direction of winds is from the west. Temperature: Maximum, 95; minimum, 20; mean, 42°. Humidity, 65 per cent.

Agricultural Possibilities.—Value of non-irrigated lands, \$1.25 per acre. Value of irrigated lands, \$25 to \$75 per acre. Types of soil, clay and sandy. Crops, alfalfa (two crops), oats, wheat, barley and vegetables. Range lands, ample. Fuel, coal, widely distributed.

Time of Completion.—Owing to the magnitude of the project, the time for its completion cannot be definitely stated. It is expected, however, that about 40,000 acres will be under ditch in about two years from the time of beginning construction.

THE RECLAMATION ACT.

The following is the law under which lands under the foregoing projects may be located:

“Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

That all moneys received from the sale and disposal of public lands in Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming, beginning with the fiscal year ending June 30th, 1901, including the surplus of fees and commissions in excess of allowances to registers and receivers, and excepting the five per centum of the proceeds of the sales of public lands in the above states set aside by law for educational and other purposes, shall be, and the same are hereby, reserved, set aside and appropriated as a special fund in the Treasury to be known as the 'reclamation fund,' to be used in the examination and survey for and the construction and maintenance of irrigation works for the storage, diversion and development of waters for the reclamation of arid and semi-arid lands in the said states and territories, and for the payment of all other expenditures provided for in this act. * * * *

"Sec. 2. That the Secretary of the Interior is hereby authorized and directed to make examinations and surveys for, and to locate and construct, as herein provided, irrigation works for the storage, diversion and development of waters, including artesian wells, and to report to Congress at the beginning of each regular session as to the results of such examinations and surveys, giving estimates of cost of all contemplated works, the quantity and location of the lands which can be irrigated therefrom, and all facts relative to the practicability of each irrigation project; also the cost of works in process of construction as well as of those which have been completed.

"Sec. 3. That the Secretary of the Interior shall, before giving the public notice provided for in Section 4 of this act, withdraw from public entry the lands required for any irrigation works contemplated under the provisions of this act, and shall restore to public entry any of the lands so withdrawn when, in his judgment, such lands are not required for the purposes of this act; and the Secretary of the Interior is hereby authorized, at or immediately prior to the time of beginning the surveys for any contemplated irrigation works, to withdraw from entry, except under the homestead laws, any public lands believed to be susceptible of irrigation from said works: Provided, That all lands entered and entries made under the homestead laws within areas so withdrawn during such withdrawal shall be subject to all the provisions, limitations, charges, terms and conditions of this act; that said surveys shall be prosecuted diligently to completion, and upon the completion thereof, and of the necessary maps, plans and estimates of cost, the Secretary of the Interior shall determine

whether or not said project is practicable and advisable, and if determined to be impracticable or unadvisable he shall thereupon restore said lands to entry; that public lands which it is proposed to irrigate by means of any contemplated works shall be subject to entry only under the provisions of the homestead laws in tracts of not less than forty nor more than one hundred and sixty acres, and shall be subject to the limitations, charges, terms and conditions herein provided: Provided, That the commutation provisions of the homestead laws shall not apply to entries made under this act.

"Sec. 4. That upon the determination by the Secretary of the Interior that any irrigation project is practicable, he may cause to be let contracts for the construction of the same, in such portions or sections as it may be practicable to construct and complete as parts of the whole project, providing the necessary funds for such portions or sections are available in the reclamation fund, and thereupon he shall give public notice of the lands irrigable under such project, and limit of area per entry, which limit shall represent the acreage which, in the opinion of the Secretary, may be reasonably required for the support of a family upon the lands in question; also of the charges which shall be made per acre upon the said entries, and upon lands in private ownership which may be irrigated by the waters of the said irrigation project, and the number of annual installments, not exceeding ten, in which such charges shall be paid and the time when such payments shall commence. The said charges shall be determined with a view of returning to the reclamation fund the estimated cost of construction of the project, and shall be apportioned equitably: Provided, That in all construction work eight hours shall constitute a day's work, and no Mongolian labor shall be employed thereon.

"Sec. 5. That the entryman upon lands to be irrigated by such works shall, in addition to compliance with the homestead laws, reclaim at least one-half of the total irrigable area of his entry for agricultural purposes, and before receiving patent for the lands covered by his entry shall pay to the government the charges apportioned against such tract, as provided in Section 4. No right to the use of water for land in private ownership shall be sold for a tract exceeding one-hundred and sixty acres to any one land owner, and no such sale shall be made to any land owner unless he be an actual bona fide resident on such land, or occupant thereof residing in the neighborhood of said land, and no such right shall permanently attach until all payments therefor are made. * * *

"Sec. 6. That the Secretary of the Interior is hereby authorized and directed to use the reclamation fund for the

operation and maintenance of all reservoirs and irrigation works constructed under the provisions of this act: Provided, That when the payments required by this act are made for the major portion of the lands irrigated from the waters of any of the works herein provided for, then the management and operation of such irrigation works shall pass to the owners of the lands irrigated thereby, to be maintained at their expense under such form of organization and under such rules and regulations as may be acceptable to the Secretary of the Interior: Provided, That the title to and the management and operation of the reservoirs and the works necessary for their protection and operation shall remain in the government until otherwise provided by Congress."

Other sections of the law, not necessary to quote herein, provide for the administration of the act by the Secretary of the Interior. This act was approved by the President June 17, 1902.

WIND RIVER RESERVATION.

By act of Congress of March 3, 1905, the Shoshone or Wind River Indian Reservation will be opened to the public, June 15, 1906, for settlement under the homestead act. This reservation comprises some of the most fertile land in the entire nation. It lies at an elevation of from 4,300 to more than 6,000 feet. Probably 250,000 acres of the tract is good farming land and the remainder is grazing land. There is some timber in the mountainous portions, and there is believed to be coal and minerals of various kinds within its limits.

Two great railroad lines are heading toward this reservation, and promise to be ready to carry passengers and freight to that section at the time of the opening.

Brief but specific information relative to this opening has recently been given to the public by Hon. W. A. Richards, Commissioner of the General Land Office, as follows:

"The ceded portion of said reservation, which embraces the land lying north and east of the Big Wind River, is to be disposed of under the provisions of the homestead, townsite, coal and mineral land laws of the United States, and will be opened to settlement and entry on June 15, 1906, and that by proclamation the President shall prescribe the manner in which such lands may be settled upon, occupied and entered by persons entitled to make entry thereof, and no person will be permitted to settle upon, occupy and enter said land, except as prescribed in said proclamation, until after the expiration of sixty days from the date when the same is open to settlement and entry.

"It is also provided that the rights of ex-soldiers and sailors under Sections 2304-2305, R. S., shall not be abridged.

"All persons making homestead entries in said reservation within two years after the opening are required to pay \$1.50 per acre, but in homestead entries made thereafter, the sum of \$1.25 is to be paid. Fifty cents per acre is to be paid at the time of making the entry, and twenty-five cents per acre annually thereafter until the price provided for has been fully paid. Lands entered under the townsite, coal and mineral land laws must be paid for in amount and manner as provided by said laws.

"Notices of location of mineral entries are required to be filed in the local land offices of the district in which the land is situated, and unless entry and payment shall be made within three years from the date of location, all rights thereunder shall cease.

"In case any entryman fails to make any of the payments for the land, as provided, within the time stated, all rights covered by such entries shall cease, and payments which have theretofore been made will be forfeited and the entry held for cancellation.

"Commutation of homestead entry may be made of these lands under Section 2301, R. S., but the parties will be required to pay the price for the land, as fixed by the act.

"After the expiration of five years from the date of the opening, all the lands then undisposed of, except mineral and coal lands, shall be sold to the highest bidder for cash at not less than \$1 per acre, and any of such lands remaining unsold after eight years from the time of opening may be sold to the highest bidder for cash, without regard to the minimum limit of price.

"The ceded portion embraces about two-thirds of the land within said reservation and contains approximately 1,150,000 acres."

In the cultivation of the lands upon this tract of land irrigation will be required. The government, through the reclamation service, has made a preliminary survey with a view of applying to it the provisions of the irrigation act, but nothing definite can be stated in regard to the action of the government at this time.

It is believed that this reservation opening will bring to Wyoming many thousands of people, and that they will be delighted with the prospect presented and remain to become citizens of the state.

Those who desire further information relative to agriculture, horticulture, etc., in this particular region are referred to the excellent articles herein on those subjects.

The Public Lands of Wyoming—Given by Land Districts and by Counties to July 1, 1904.

Land District	County	Area unappropriated and unreserved			Area reserved	Area appropriated	Total area of land surface of the country in land district
		Surveyed	Unsurveyed	Total			
Buffalo.....	Big Horn.....	2,469,925	560,577	3,030,502	.....	364,498	3,395,000
	Converse.....	11,200	.....	11,200	.....	800	12,000
	Crook.....	308,830	.....	308,830	320	18,850	328,000
	Fremont.....	12,336	.....	12,336	.....	12,664	25,000
	Johnson.....	2,230,106	35,200	2,265,306	.....	390,694	2,656,000
	Natrona.....	70,846	.....	70,846	.....	6,154	77,000
Cheyenne.....	Sheridan.....	831,560	173,120	1,004,680	120,141	515,179	1,649,000
	Weston.....	305,718	.....	305,718	.....	3,282	309,000
	Albany.....	1,538,602	21,581	1,560,183	409,193	888,624	2,858,000
	Carbon.....	3,333,425	10,701	3,344,126	1,223,011	565,863	5,133,000
Douglas.....	Fremont.....	200,348	32,979	233,327	.....	8,673	242,000
	Laramie.....	2,776,446	.....	2,776,446	.....	1,619,554	4,396,000
	Sweetwater.....	709,096	.....	709,096	263,986	7,918	981,000
	Converse.....	3,608,660	6,400	3,615,060	.....	569,940	4,185,000
Evanston.....	Fremont.....	820,637	104,362	924,999	.....	36,001	961,000
	Natrona.....	2,993,655	116,236	3,109,891	.....	252,109	3,362,000
	Fremont.....	624,851	583,377	1,208,228	560,759	109,013	1,878,000
	Sweetwater.....	3,906,897	338,947	4,245,844	33,600	1,480,556	5,760,000
Lander.....	Uinta.....	1,146,556	455,301	1,601,857	2,261,638	1,042,556	4,906,000
	Big Horn.....	934,587	135,400	1,069,987	2,728,123	548,890	4,347,000
	Fremont.....	762,528	22,981	785,509	3,967,378	316,113	5,069,000
	Yellowstone Park.....	86,085	12,690	98,775	1,971,813	90,412	2,161,000
Sundance.....	Converse.....	101,442	.....	101,442	.....	1,558	103,000
	Crook.....	2,420,950	.....	2,420,950	65,123	672,207	3,158,280
	Weston.....	2,115,040	.....	2,115,040	.....	469,960	2,585,000
	Totals in Wyoming.....	34,320,326	2,609,852	36,930,178	15,511,085	9,992,017	62,433,280

PINE CREEK,
ONE MILE
BELOW
FREMONT LAKE.





AN IRRIGATION CANAL
AT WHEATLAND.

SUTHERLAND
DENVER

The public lands in Wyoming consist chiefly of grazing, timber and agricultural lands, though there are large areas of coal, oil and mineral lands.

The agricultural lands are those lying contiguous to the rivers and streams, and are vast in extent, but crops cannot be successfully raised without irrigation. By the application of water the soil is rendered very productive and is not surpassed by the states of the Mississippi and Missouri Valleys.

The laws under which title to government land may be acquired by citizens of the United States are the homestead law, the desert land law, the timber and stone law and the coal and mineral law.

Homestead Law.—The homestead law secures to qualified persons the right to settle upon, enter and acquire title to not exceeding one quarter section (one hundred and sixty acres) of public land, by establishing and maintaining residence thereon and improving and cultivating the land for the period of five years. A homestead entryman must be the head of a family or a person who has arrived at the age of twenty-one years. He must be a citizen of the United States, or one who has declared his intention to become such, as required by the naturalization laws. The act of March 3, 1891, attaches the condition that he must not be the proprietor of more than one hundred and sixty acres of land in any state or territory.

Where a wife has been divorced from her husband, or deserted, so that she is dependent upon her own resources for support, she can make a homestead entry as the head of a family or femme sole.

A single woman who makes a homestead entry and marries before making proof does not forfeit her right, provided she does not abandon her residence on the land.

Parties desiring to commute their homestead entries to cash are required to make proof of settlement and of residence on and cultivation of the land for a period of fourteen months from the date of entry.

The following is a table of fees and commissions charged in the mountain states under the homestead act:

Acres	Class of Lands	COMMISSIONS		Fees, Payable when entry is made	Total sum
		Payable when entry is made	Payable when certificate issues		
160	\$2.50*	\$12.00	\$12.00	\$10.00	\$34.00
80	2.50*	6.00	6.00	5.00	17.00
40	2.50*	3.00	3.00	5.00	11.00
160	1.25†	6.00	6.00	10.00	22.00
80	1.25†	3.00	3.00	5.00	11.00
40	1.25†	1.50	1.50	5.00	8.00

*Inside Union Pacific Land Grant.

†Outside Union Pacific Land Grant.

Desert Lands.—All lands, exclusive of timber lands and mineral lands, which will not, without artificial irrigation, produce some agricultural crop, are deemed desert lands, and are subject to entry under the desert land law. The party making entry is required at the time of filing his declaration to file also a map of the land, which will exhibit a plan showing the mode of contemplated irrigation, which plan shall be sufficient to thoroughly irrigate and reclaim said land and prepare it to raise ordinary agricultural crops. No person is permitted to enter more than 320 acres of land in the aggregate under all the land laws of the United States, mineral lands excepted.

The right to make desert land entries is restricted to resident citizens of the state in which the land sought is located. The entryman must expend at least three dollars per acre, one dollar per acre during each year for three years, and must file proof thereof during each year, such proof to consist of his affidavit, corroborated by the affidavits of two or more witnesses, showing that the full sum of one dollar per acre has been expended during such year and the manner in which expended, and at the expiration of three years a map or plan showing the character and extent of the improvements. The party may make his final entry and receive his patent at any time prior to the expiration of three years by making required proof of reclamation and of the expenditure of the aggregate amount of three dollars per acre, and of the cultivation of one-eighth of the land. Persons making desert land entries must acquire clear right to the use of sufficient water for the purpose of irrigating the whole of the land, and of keeping it permanently irrigated. Persons making desert land entries before they have secured a water right do so at their own risk. The price of land sought to be entered under the provisions of the desert land act is \$1.25 per acre, without regard to the situation of the lands in regard to railroad grants. When proof of the character of the land has been made the applicant will pay the Receiver twenty-five cents per acre for the land applied for. At the time of making final proof the payment of one dollar per acre is required.

Timber and Stone Entries.—The act of June 3, 1878, provides that surveyed lands in the public land states, valuable chiefly for timber and stone, unfit for cultivation, and consequently unfit for disposal under the homestead and desert land laws, may be purchased by individuals and by associations at the minimum price of \$2.50 per acre. A party making application to purchase a tract of this character is required to make affidavit that he is a citizen of the United States by birth or

naturalization, or that he has declared his intention to become a citizen under the naturalization laws. The quantity of land which may be acquired lawfully under said act by any one person or association is limited to not exceeding 160 acres, which must be in one body.

Coal.—A qualified person has the right to enter by legal subdivision any quantity of coal lands in the United States, not otherwise appropriated or reserved by competent authority, not exceeding 160 acres to such individual person or 320 acres to an association, upon payment to the government of not less than \$10 per acre for such lands, where the same shall be situated more than fifteen miles from any completed railroad, and not less than \$20 per acre for such lands as shall be within fifteen miles of such road.

Mines and Mineral Lands.—Lands valuable for deposits of mineral, such as fire and pottery clay, marble, asphalt, soda, sulphur, diamonds, or of the precious common metals, are subject to sale under the mining laws. A location must be first duly made and recorded, and certain sums must be annually expended. Five hundred dollars' worth of labor and improvements must be laid out on each claim before patent can be applied for. The rules and regulations and methods of procedure are too extensive and complex to be reviewed at length in the compass of this brief article. Mining locations defeat all railroad and state selections, if the mines and minerals were known to exist, or were discovered prior to the time the road and state claims took effect. Homestead, desert and timber and stone entries cannot embrace known mineral lands, unless it be first shown that the lands sought to be entered are more valuable for agricultural purposes than for the mineral they contain.

The United States land offices for the several districts in Wyoming are as follows: Albany, Carbon and Laramie Counties, and a few townships in Southeastern Sweetwater and Southeastern Fremont County, at Cheyenne, Wyo.; Sweetwater and Uinta Counties, at Evanston, Wyo.; Fremont and Big Horn Counties, at Lander; Johnson, Sheridan and a small portion of Eastern Big Horn County, at Buffalo; Crook and Weston, at Sundance; Converse and Natrona, at Douglas.

State Lands.

There are two kinds of lands—state and government.

The non-mineral land laws, which have been of the greatest benefit to the arid west, are the pre-emption, homestead, desert land and Carey act. The pre-emption act has been repealed.

Under the homestead act, settlement on a tract of one hundred and sixty acres, or less, is required for five years, when title passes to the settler without any money consideration, or after fourteen months' actual settlement the title may be obtained by the payment of \$1.25 per acre.

Under the desert land act, three hundred and twenty acres may be acquired within three years by the expenditure of \$3 per acre in improvements, water rights and cultivation, and the payment to the government of \$1.25 per acre.

Other acts grant to the states for aid in the support of public schools, Sections 16 and 36 in each township. This grant amounts in Wyoming to 3,001,905 acres. There is also given the state five per cent of all money received by the general government for the sale of its lands in Wyoming. The interest on this fund is used in aid of the support of the schools.

There have also been granted to Wyoming 663,080 acres for aid in support of her several institutions, such as the University, Agricultural College, Hospital, Insane Asylum, Penitentiary, Soldiers' Home, etc.

The rental of these lands, which are mostly pasture lands, bringing an average rental of three cents per acre, and the interest upon the fund realized from their sale, at not less than \$10 per acre, is used in aid of the maintenance of these institutions.

STATE LANDS—HOW THEY MAY BE ACQUIRED.

There are two classes of state lands:

First—Those donated to the state for various public purposes, and over which the state has absolute control.

Second—Those known as "arid lands," whose donation to the state is conditional upon their reclamation.

Under the provisions of the constitution and statutes, the State Boards of Land Commissioners, consisting of the Governor, Secretary of State, State Treasurer and Superintendent of Public Instruction, have the direction, control, disposition and care of all lands granted to the state.

First—Those donated to the state for various public purposes, and over which the state has absolute control.

May Be Sold.—The act of admission provides that school lands, including the grant for the use of the Agricultural College, shall be sold for not less than \$10 per acre. The constitution provides further that lands heretofore and hereafter acquired shall be sold for not less than \$10 per acre, and that such lands shall be disposed of at public auction.

May Be Leased.—The State Boards of Land Commissioners lease any legal subdivision of the lands of the state at an annual rental not less than five per cent of the valuation thereof, fixed by the board, conditioned upon the payment of the rent annually and in advance, and for periods of not more than five years. When any lease expires by limitation the lessee may, with the permission of the board, renew the same as follows: At any time within ninety days next preceding the expiration of the lease the lessee or his assigns shall notify the Commissioner of Public Lands of his or their desire to renew the lease. If the lessee and the board be agreed as to the valuation of the land, a new lease shall be issued, bearing even date with the expiration of the old one, and upon like conditions.

The power given to the board to refuse to renew a lease or to sell state lands at the expiration of a lease, or again to lease to other parties than the original lessee, shall not apply, whenever the original lessee of state land or his assigns shall have, during the period of his lease, or prior thereto, reclaimed the same by irrigation, and shall have provided suitable ditches for its full and complete reclamation, and shall have secured an adequate and perpetual water supply for said land, and shall have continuously cultivated and irrigated one-fourth thereof, or shall have, during the term of his lease, constructed upon any section of state land or legal subdivision thereof, a well, or reservoir, for the purpose of watering live stock, of the value of \$200, then, in such cases, the said original lessee, or his assigns, shall have a preferred right to renew such lease for a term of five years, which renewal may be repeated for the same period of five years thereafter, and may again be repeated for a period of ten years thereafter, making a total period not to exceed twenty years; Provided, That each of said renewals shall be dependent upon the continuous irrigation and cultivation of said land or upon the maintenance and use of said well or reservoir; and, Provided, further, That the said lands, at each renewal period, may be appraised by the board having jurisdiction thereof; said appraisement to be made irrespective of any irrigation works or improvements placed thereon by the lessee.

The lessee of state lands is prohibited, in all cases, from cutting or using more of the timber thereon than shall be necessary for the improvement of such lands, or for fuel for use of the family of the lessee, and from the cutting and hauling of timber from leased state lands to saw mills.

Any lease of state lands procured by fraud, deceit or misrepresentation may be canceled by the board upon proper proof thereof.

The necessary blanks and information will be supplied any person desiring to lease state lands, upon application to Robert P. Fuller, Commissioner of Public Lands, Cheyenne, Wyo.

Second—Those known as arid lands whose donation to the state is conditional upon their reclamation.

The act of Congress approved August 18, 1894, donated to the State of Wyoming, conditional upon its reclamation, one million acres of arid land. The State of Wyoming accepted the conditions of the grant, and by Chapter 15, Title 9, of Division 1 of the Revised Statutes, provided for its reclamation, occupation and disposal. The general provisions of this law are as follows:

Request and Proposal.—Any person, or company of persons, having constructed or desiring to construct ditches, canals or other irrigation works to reclaim lands under the provisions of this act, shall file with the State Board of Land Commissioners a request for the selection of the land to be reclaimed, and accompany this request with a proposal to construct the ditch, canal or other irrigation works necessary for the complete reclamation of the land asked to be selected, and shall make clear to the board their financial ability to carry out the proposed undertaking.

Guaranty.—A certified check for such sum as may be determined by the board shall accompany each request and proposal as a guarantee that a contract with the state will be entered into according to its terms.

Maps and Field Notes.—An accurate survey must be made and maps and field notes furnished the board, with a certified copy of a permit from the State Engineer to appropriate water for the reclamation of the land described.

Terms of Contract—With State for Construction—With Settler for Land and Water—Bond.—Upon the withdrawal of the land by the Department of the Interior, it shall be the duty of the board to enter into a contract with the parties submitting the proposal, which contract shall contain complete specifications of the location, dimensions, character and esti-

mated cost of the proposed ditch, canal or other irrigation works; the price per acre and terms at which such works and perpetual water rights shall be sold to settlers; provided, that such price and terms for irrigation works and water rights shall in all cases be reasonable and just. This contract shall not be entered into on the part of the state until a satisfactory bond is filed by the proposed contractor for irrigation works, which bond shall be in a penal sum equal to five per cent of the estimated cost of the works.

Time Allowed for Construction.—No contract shall be made by the board which requires a greater time than five years for the construction of the works, and all contracts shall state that the work shall begin within six months from the date of contract; that at least one-tenth of the construction work shall be completed within two years from the date of said contract, and that construction shall be prosecuted diligently and continuously to completion. Upon failure of contractors to complete ditch or canal under contract, the land board may sell any such incomplete works at auction.

HOW TO ACQUIRE A HOMESTEAD UNDER THE ARID LAND ACT.

Any citizen of the United States or any person having declared his intention to become a citizen of the United States (excepting married women not the heads of families), over the age of twenty-one years, may make application for a certificate of location upon any of the segregated lands in an amount not to exceed one hundred and sixty acres.

The prospective settler must first secure a contract from the irrigation company for a water right for the land upon which he desires to locate. The application and a duplicate copy of the water contract must be filed with the Commissioner of Public Lands within thirty days of the date of issuing said water contract, and be accompanied by a payment of twenty-five cents per acre in partial payment of the land, and a fee of \$1 for filing the application. If the application is not allowed, the payment of twenty-five cents per acre is returned.

The application must be sworn to before a United States Commissioner or other officer authorized to administer oaths.

During the first year the settler must reclaim and irrigate not less than one-sixteenth of the land applied for, and within two years must irrigate and cultivate not less than one-eighth of the land. Within three years the settler must make final proof, showing that he has lived upon the land with his family, if any, for not less than a period of six months, immediately prior to date of application for patent, and showing reclama-

tion and cultivation of not less than one-eighth of the land, and such further details in regard to crops raised as called for in the final proof blank.

The reclamation can be completed and land patented in the first year.

Application for patent must be accompanied by the final payment of twenty-five cents per acre on the land and state fees of \$2 for filing application and issuing the patent.

Patents—Water Rights Appurtenant.—The water rights to all lands acquired under the provisions of this act shall attach to and become appurtenant to the land as soon as title passes from the United States to the state.

Fees.—For filing each application, \$1; for filing each final proof, \$1; for issuing each patent, \$1; for making certified copies of papers or records, the same fee as provided for to be charged by the Secretary of State for like services. The money collected for fees shall be paid to the Treasurer of the state, and by him credited to the fund created by virtue of this act.

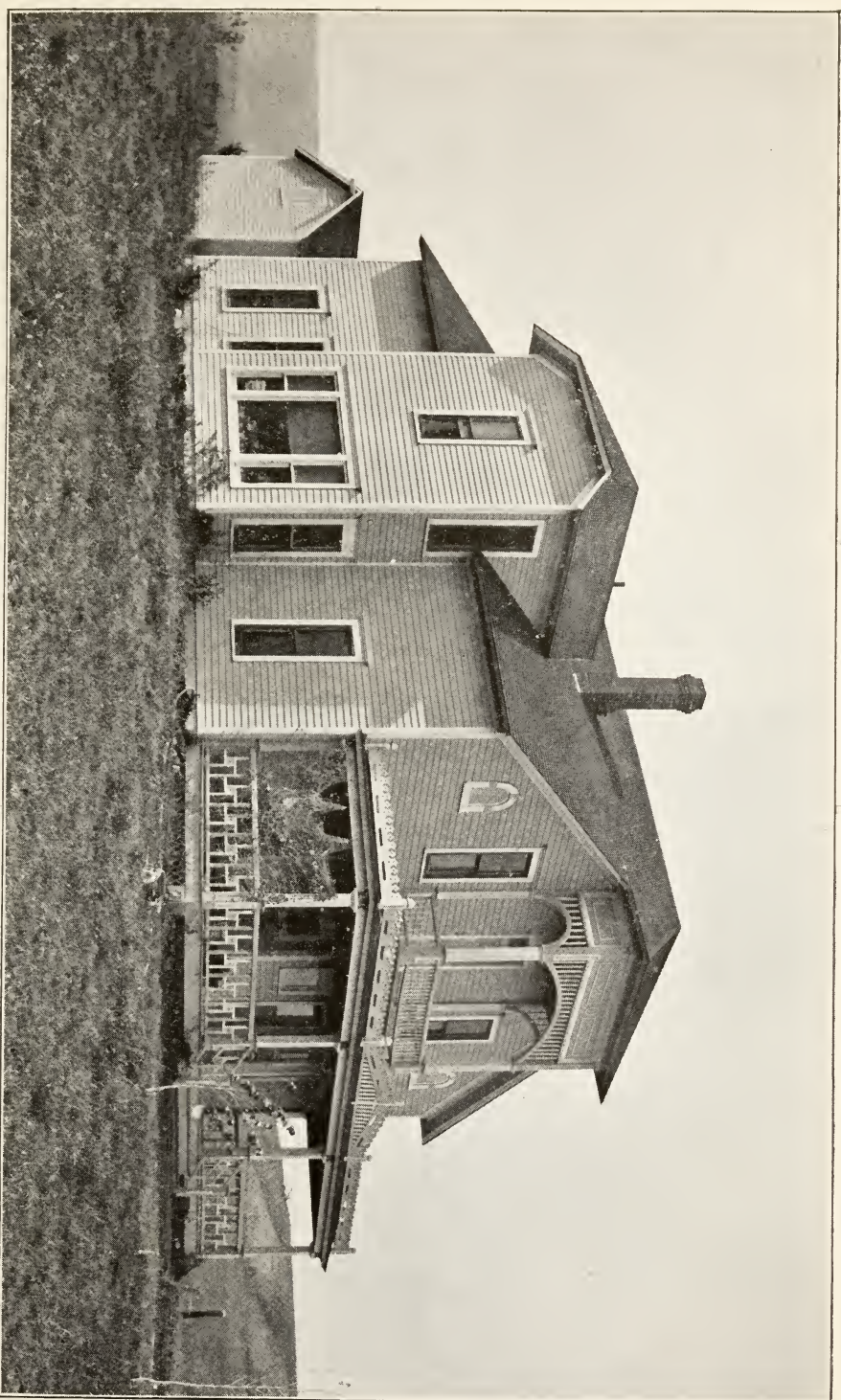
The moneys received by the state for the lands at fifty cents per acre create a fund for the reclamation of other lands by the state itself.

This act is now proving to be the most beneficial to this state of any of the land acts, and probably more so to this than to any other state, for the reasons:

First—This state of all the arid states has the best irrigation laws for all kinds of irrigation projects, and especially for those under the Carey act.

Second—Because the State Land Board has taken special and practical interest in furthering the state's interests under this act; and,

Third—Because the state and national governments are behind the act and afford perfect protection for the capital invested and to the settler for the title to his land and the perpetuity of his water right. There is no possibility of any fake scheme whereby the individual investors or the settlers can lose. For these reasons and the fact that the soil, climate and altitude of Wyoming are especially adapted to the most profitable crops as the result of irrigation, this state has accomplished more under this act than has any other of the arid states, and the act is accomplishing more for the settlement and growth in wealth of the state and the furnishing of homes for the poor than any other land act of the general government. Homes worth \$50 per acre are obtainable for from \$10.50 to \$30.50 per acre, and capital invested is assured a fair profit.



A Modern Ranch Home in Natrona County,
Residence of Governor B. B. Brooks.



GRAND CANON OF NORTH PLATTE RIVER, NATRONA COUNTY.

WHAT HAS BEEN DONE.

Under the arid land act the State of Wyoming has segregated and contracted for the reclamation of 556,593.39 acres.

The first segregation for the Cody Canal, by the Shoshone Irrigation Company, comprised 26,429.94 acres. This land is located near the town of Cody, in Big Horn County. The canal takes its water supply from the South Fork of the Shoshone River, and the state has obtained patent from the government for 19,868.54 acres. Nearly all of this land has been filed upon and a considerable portion reclaimed.

The Burlington and Bench Canals, owned by the Big Horn Basin Development Company, Germania and Burlington, Wyoming, were originally intended to cover 32,429.94 acres which was segregated. It was found, however, that, on account of the greater amount of water available under the Oregon Basin Canal, it would be more profitable to furnish water from the latter rather than from the proposed Burlington Canal from the Grey Bull River. The state has obtained a patent under the Bench Canal for 11,261.60 acres, part of which is still open for settlement, and has application for patent for a portion of the remainder. The balance will be covered by the Oregon Basin Canal and will not be open for settlement before 1907.

The Big Horn Basin Colonization Company: 20,599.64 acres have been segregated under this project and 8,707.64 acres have been patented to the state. These lands are in the main occupied by Mormon colonists and have been generally reclaimed, and exhibit a successful development of the agricultural possibilities of the Big Horn Basin.

The Lovell Irrigation Company had 11,320.51 acres segregated and 7,161.43 acres have been patented to the state. This, as in the case of the Sidon Canal, is also taken up by the Mormon colonists.

The North Platte Canal and Colonization Company, Wyncote, Wyoming, has constructed about thirty miles of canal along the North Platte River and has located a number of settlers under the completed portion. As this canal occupied a right of way desired by the Government Pathfinder Canal, they have entered into arrangement with the United States by which the government will furnish the water for 14,424.94 acres segregated for their project, and their entire tract will be ready for patent to the state in May, 1905, at which time they will be authorized to locate settlers upon all their lands. Under the part of the canal now completed there is room for a number of settlers.

The Hanover Canal Company, Worland, Wyoming, has 10,682.53 acres now segregated. This company will have a canal about thirty-five miles long, taking in a considerable amount of land along the east side of the Big Horn River, in addition to the amount now segregated. A portion of their canal has been constructed and they are ready to furnish water to prospective settlers. As the altitude of these lands is 4,200 feet, there is no doubt that one of the most prosperous colonies in the state will be located near Worland.

The Big Horn County Irrigation Company, which has recently assumed the incomplete Big Horn County Canal, has 16,295.44 acres of land segregated. This company has about six miles of canal, twenty feet wide, partly completed, and expects to reclaim the land in the vicinity of Basin, the county seat of Big Horn County. Their land should be open to settlement during the season of 1907, although it is possible that a part of the lands may be open during 1906.

One of the earliest applications under the arid land act was that of the Uinta Canal No. 2, segregating 12,698.68 acres of land along the Union Pacific railroad west and east of Granger, in Uinta County, about three miles from the station, near the Blacks Fork River. Owing to its proximity to the Union Pacific railway, this should be one of the best irrigation projects in the west. The company has not fully completed its reservoir system, so it is necessary to wait until there is an ample supply of water before opening the land for settlement.

The largest project to be constructed by private capital is that of the Oregon Basin Canal Company (413 New York Life building, Omaha, Neb., and Cody, Wyo.). This company has already segregated 145,384.10 acres, and expects to reclaim in excess of 200,000 acres. The project contemplates storing a large portion of the flood water of the South Fork of the Shoshone River in what is known as the Oregon Basin, and during the irrigation season carrying it upon a vast tract of land between Burlington and Cody, Wyo. This company also has completed the Sage Creek Canal, covering 784.43 acres, which takes the flood waters of Sage Creek. Patent has been applied for for this small tract.

The construction of the main canal will be begun during the present season, and the land should be open for settlement in 1907.

The Boulder Lake Canal Company, Boulder, Wyo., has segregated 6,120 acres of land in Western Fremont County, under a fork of the Green River. The canal has been completed and the land is now open for settlement.

The North Platte and Encampment Canal, Saratoga, has segregated 18,121.27 acres of land between Saratoga and Encampment, along the North Platte River. The construction of the canal has not yet begun, but should be completed in time for settlement in 1907.

The Fort Laramie Canal and Reservoir Company made an application for the segregation of nearly 27,000 acres of land in Laramie County, but as their plan conflicts with the government "Pathfinder" project, it is probable that an arrangement will be made by which the government canals will furnish water for this tract of land.

The first large canal company in Wyoming was the Wheatland Development Company, which acquired, by purchase, a large body of land in Laramie County and furnished water for same by the construction of a canal from the Laramie River, cutting a tunnel through the Laramie Mountains. Owing to the diversion of part of the water of the Laramie River, within the State of Colorado, this company found it necessary to construct an immense reservoir in Albany County to store the flood waters of the Laramie, and now, having an excess amount of water, has applied for the segregation of about 8,000 acres of land under the Carey land act, and will be ready to sell water rights to prospective settlers as soon as their application has been approved by the United States General Land Office.

Prospective settlers can secure information in regard to these several projects by writing to the companies at the addresses given above.

The arid land act is advantageous for small projects, as well as for those requiring investment of large capital.

The Fisher Canal, covering 320 acres; the Fitzsimmons Ditch, covering 160 acres, and the John Scott Ditch, 160 acres, have been completing under this provision, and the land under the John Scott and Fitzsimmons Ditches patented.

In a former pamphlet issued by the state, reference was made to the Cody & Salisbury segregation, comprising about 80,000 acres to the north of the North Fork of the Shoshone River. This tract of land and the irrigation rights belonging thereto have been turned over to the Government Reclamation Service and is included in the Shoshone project, mentioned elsewhere in this issue.

How to Obtain a Right to Use Water in Wyoming.

CLARENCE T. JOHNSTON, STATE ENGINEER.

Section 31 of Article 1 of the Constitution of Wyoming reads as follows:

"Sec. 31. Water being essential to industrial prosperity, of limited amount, and easy of diversion from its natural channels, its control must be in the state, which, in providing for its use, shall equally guard all the various interests involved."

The state has provided a regular procedure whereby anyone desiring to make a beneficial use of water may be protected from the inception of the work of construction to the application of water to the ground and the acquisition of the right to use the same. The state has been divided into four water divisions, each of which is supervised by a division superintendent. These four officers, with the State Engineer, constitute the State Board of Control. The divisions are still further divided into water districts, where the immediate control of the water is supervised by water commissioners under instructions from the division superintendents and the Board of Control. The control of water still lies in the state, even though a right to use the same is granted. This right may be compared with a right of way granted by the general government where the beneficiary has the use of lands for certain purposes, but for the protection of the public the control remains in the hands of national authorities.

To obtain a right to use water, the party proposing to apply must first survey his ditch line and determine the lands which can be irrigated. He can secure blanks for making the application from the State Engineer's office, and when these have been filled out and accompanied with maps in duplicate showing the necessary information, they can be forwarded, with the filing fee of \$2, to that office. A receipt is sent the applicant and the application is taken up in its regular order. If in proper form, and the approval does not seem to be injurious to others, it is so approved, and is thereafter designated as a permit. It is recorded in a special record book and given a number. The original map which accompanied the application is filed in the office of the State Engineer under

this number and the permit is returned, with the duplicate map, to the applicant. A letter of transmittal accompanies the permit and map, which explains the steps which are then necessary on the part of the applicant, if he is to perfect his right to use water. Attached to this letter is a stub, which, when filled out, makes a notice of completion of the irrigation works. The applicant is given a limited time to finish construction work, and when it has been concluded he tears off the stub, fills in the blank spaces and sends the notice to the State Engineer's office. The State Engineer notes the completion of the works on the records and sends a receipt for the notice to the applicant.

Each division superintendent is furnished with a card index, each card of which contains a brief of all the permits which have been issued in his division. When a notice of completion is received by the State Engineer, the superintendent is so informed and he indicates the same on the proper card. His cards are arranged by streams, so that in visiting any locality he can inspect all works for which notices of completion have been received and if the work has been done, and lands irrigated in accordance with the permit issued by the state, he takes proof of the same from the applicant. This proof is evidence of the applicant's having complied with the terms of his permit. The Board of Control meets twice each year: on the second Wednesday in March and the third Wednesday of October. Prior to these meetings the superintendents advertise all proof they have taken, and if any contests of proof submitted are made, a time and place is set for a hearing and further testimony is taken, which, together with a tabulation and report of all proceedings, is brought to the board meeting by the superintendent. The Board of Control considers the testimony given in the proofs and by contest procedure, and orders the issuance of final certificates of appropriation accordingly. These papers grant the use of water as long as beneficial application of the same is made and the rights of others are not interfered with. The certificate of appropriation is first recorded in the office of the Board of Control and then sent to the County Clerk of the county where the beneficial use of water has been made, where they are again recorded. The County Clerk forwards the certificate to the appropriator after it has been duly recorded.

By this procedure the public is notified of the extent of the proposed use before work begins, careful plans must be made for constructing irrigation works and reclaiming the lands lying thereunder, and the date of the priority of right to use water is fixed by the filing of the application in the office

of the State Engineer. The steps leading to the acquisition of a right to use water are in brief as follows:

1. Survey of ditch or reservoir and irrigable lands.
2. Preparation of maps and application.
3. Approval of application by state and issuance of a permit.
4. Prosecution of construction and reclamation of lands.
5. Notice of completion of construction and the application of water to a beneficial use.
6. Inspection by division superintendent and the submission of proof.
7. Report of superintendent to board and the preparation of the decree.
8. Issuance of the final certificate of appropriation.

While the procedure would seem to be complicated, yet the appropriator does not have to follow the administrative phase of the work. He makes his application properly, builds his irrigation works, reclaims the land in accordance with the permit and makes proof thereof. Under any system he would have to construct the canals or reservoirs and perform the labor necessary to bring the lands under irrigation. Before he could secure a right to use the water undisturbed he would have to make some kind of proof of his having made beneficial application of the same.

It costs at least five dollars per acre to reclaim lands by irrigation. When this is accomplished the lands have a value of at least twenty dollars per acre. If the stability of the water right can be insured at an expenditure of fifty cents per acre, no better investment could be made by an irrigator. The Wyoming law and administration provides such insurance.

Presume that it is planned to claim one hundred and sixty acres of land, and a ditch four miles in length is to be constructed. It is found that a surveyor can be secured to make the necessary location, measurements and prepare the maps. It requires three days for him to reach the land, make the surveys and return. For this he charges thirty dollars. He then makes the maps and prepares a portion of the application. For this work he charges an additional fee of ten dollars. The application is then completed and is sworn to before a notary, who charges fifty cents. It is then mailed, with the maps, to the State Engineer, accompanied with the filing fee of two dollars. After approval, the permit is returned to the applicant, when construction can properly begin. When the irrigation works are finished and the lands reclaimed, the division superintendent appears and receives

proof thereon. He collects a fee of one dollar and seventy-five cents, as required by law. Of this fee, one dollar goes to the State Treasurer to reimburse the state for the expense incurred in issuing the final certificate of appropriation, and seventy-five cents is mailed, with the certificate, to the County Clerk to cover the recording fee in that office. The costs may be summarized as follows:

Survey and maps.....	\$40.00
Notary fee .....	.50
Recording fee, State Engineer's office..	2.00
Fee for final certificate.....	1.00
Fee for recording in office County Clerk	.75
Total.....	<u>\$44.25</u>

The total cost of securing the right to use water is, therefore, a little less than twenty-eight cents per acre. The investment in irrigation works would be at least five dollars per acre, so that the rate of insurance is only about $5\frac{1}{2}$ per cent of the cost of construction. As the value of the lands irrigated depend almost entirely on the water right, the rate of insurance would ordinarily not exceed one per cent.

Agriculture and Horticulture.

Upon the agriculture of a region must its continued and permanent prosperity depend. Poor indeed is any country which has no staple form of agricultural industry, and the more varied are its farming interests, the greater is the independence, the industrial and financial success of its people. The conditions in Wyoming are so varied that it is difficult to classify them. As a whole the state is located in the heart of the mountain and plateau portion of the arid region. The average altitude of our agricultural land is about 6,000 feet above the sea. There are extensive and well watered plateaus between 7,000 and 8,000 feet which offer especial advantages for the kind of agriculture suited to them, and there are probably larger areas of irrigable land below 5,000 feet altitude than are found in any other portion of the west. The mean annual temperature varies from about 40° F. to 50° F., depending on the altitude and the protection of surrounding mountains. The growing season, free from frost, ranges from less than eighty days to more than 150 days. The annual rainfall may exceed thirty inches on the higher mountain

ranges, is seventeen inches to twenty-one inches in the northeast corner of the state, and perhaps not more than four inches on the driest interior region known as the Red Desert. The average annual precipitation is about twelve inches for the farming sections of the state, and its distribution through the year is most favorable to the growth of crops, as 40 per cent to 50 per cent of the total falls in the spring months, which secures the germination of seeds and supplies the early growth of plants before irrigation becomes necessary.

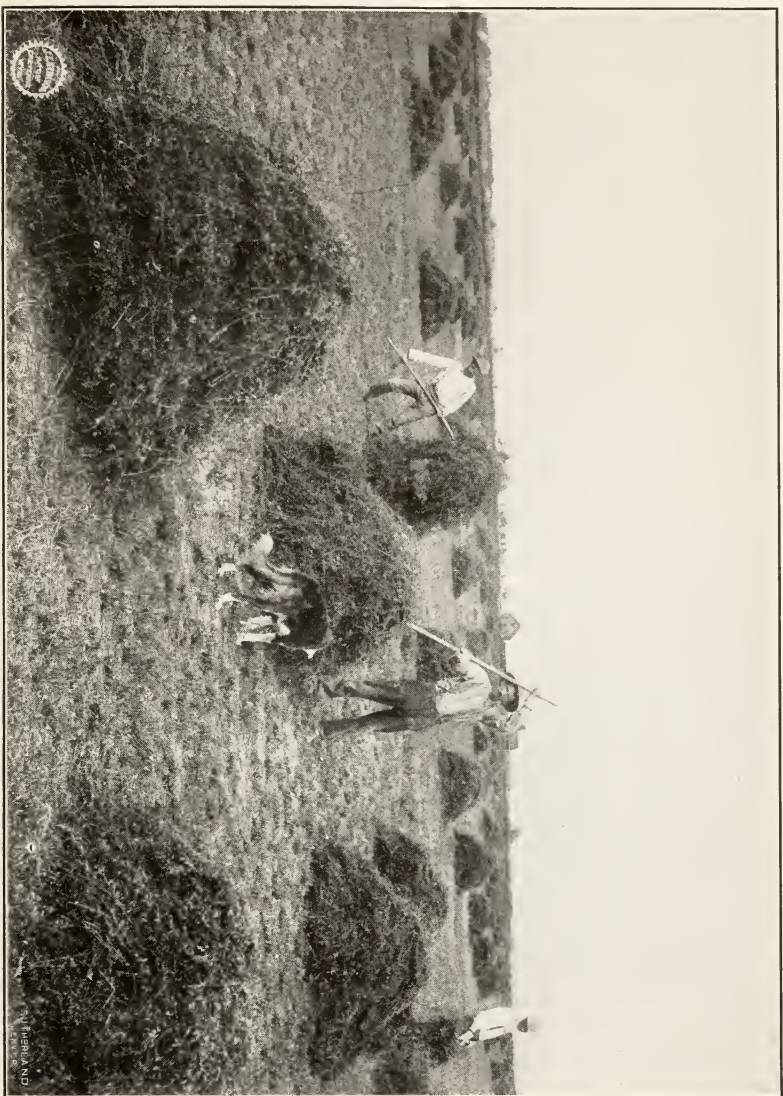
As a whole the soils of the state are wonderfully fertile, as they have not been subject to leaching by heavy rainfall and contain all the plant food which was in the original rocks from which they are formed. Phenomenal yields are obtained on these virgin soils, and maintaining their fertility is simply a question of farm practice and rotation. It is neither necessary nor advisable to use expensive commercial fertilizers.

The health factor in the climate cannot be excelled for man, animals and plants. The high quality of Wyoming stock and crops has received flattering recognition and tribute at every international exposition, and at local, state and national fairs. In 1904, at the Louisiana Purchase Exposition, Wyoming received more grand prizes and gold medals for her agricultural crops for her size in population than any other state, and at the 1904 International Stock Show at Chicago, with a single exception, Wyoming captured every prize for the northwest district.

Development.—There are few who can appreciate the newness of the western agriculture and its bearing on our development. Farm practices and other human institutions which have been worked out through an hundred or a thousand years in pluvial districts have been brought into arid America and made general use of, regardless of the fact that they were not suited to conditions of climate, soil and social relationships so absolutely different from those in which they had become established. Regardless of this fact, our agriculture has been successful from the first, in that it sustains a people of continuing and increasing prosperity. Thanks to the favoring factors of rich soils and salubrious climate, agriculture has been profitable in spite of lack of information and mistakes in methods, crops and laws.

Our knowledge of so complex a business as agriculture is, of necessity, accumulative, and with the simple and slight beginning already made and the resulting success, the immediate future promises vastly more than can be stated or realized.

Our first agriculture was the grazing of stock, and so remunerative was the grazing industry that Wyoming be-



AN ALFALFA FIELD AT WHEATLAND.



APPLE TREES AT CAREYHURST, CONVERSE COUNTY.

came famous for her grass-fed cattle, her range horses and her sheep and wool. With the passing of the open range and the establishment of ranches where increased amounts of hay and forage can be grown, the stock industry is steadily increasing, and there has been rapid improvement in the class of animals produced.

But it is in the cultivation of the soil, both for the production of supplemental stock food and of salable crops, that our agriculture has developed most rapidly within the past ten years. No other industry has kept pace with this in growth and no other class of citizens have so much to show for their ten years' labor. Ranchmen are prosperous and are building homes worthy the name. With new incite into our farming and the new internal improvements which are now under way in the state, the present cheap lands under irrigation must materially advance in valuation, and new crops and new markets insure more rapid improvement in the future. In the language of the Secretary of Agriculture, there are no bad acres in this state. All are useful for some purpose, and with good management our irrigated lands can all be made to pay 10 per cent or better on a valuation of \$100 per acre. The next ten years will be marked by unusual activity in reclamation through irrigation, as well as extension of dry farming, which will double and treble both our population and our land values.

Several factors make our farming highly profitable. Some of these are, large areas of free public land, good water supply which can be cheaply applied to the land, large home market at high prices for home-grown products, unexcelled quality of both crops and flesh, which demands the best prices wherever they may be marketed, large yields from virgin arid soils and quick returns from crops and stock.

High Altitude Farming.—Perhaps no parts of the state are better adapted to the production of live stock than our extensive high plateaus. The rich native grasses reach perfection of growth on these higher lands and are more abundant and varied than on lower areas where the seasons are longer. We find our short season hay is unusually rich in the flesh-forming element, nitrogen, and with their quick growth, grasses produce less woody fibre and are more digestible when fed to live stock than are grasses that take a longer time to mature. Because of the short seasons and a general lack of understanding about the possibilities of perfecting crops under these conditions, the development of general farming has been slow, even though at least one of the first large irrigating canals to be constructed was the Pioneer Canal, on

the Laramie Plains, covering excellent lands a little more than 7,000 feet above sea level. In 1891 the Agricultural Experiment Station was established at Laramie, and the possibility of remunerative cropping has been fully demonstrated. Crops suitable to the season produce large yields, and the problems are no more difficult to meet than those in any farming district. Alfalfa is now a successful staple crop up to 7,500 feet altitude. Early varieties of potatoes and other root crops, oats, barley, rye, wheat, spelts, flax, buckwheat, pease and other things are certain crops, and mixed farming is becoming established. There are still many opportunities to obtain cheap lands in these regions, which can be made to pay for themselves with a single crop. The station records show average yields of wheat, including all varieties tried, of over twenty-five bushels per acre for a period of ten years. Some maximum yields of other crops are, potatoes, 522 bushels per acre; alfalfa, $4\frac{1}{4}$ tons; onions, 38,920 pounds; spelts, 72 bushels; barley and oats, more than 80 bushels, and many other things have given large maximum yields and good average returns. Three years' experiments to determine the cost and profit of growing wheat show an average net profit of more than \$10 per acre, where done on a small scale at comparatively large expense.

Stock Feeding.—Within the past year there has been a large increase in the business of feeding stock at home to prepare them for the eastern market. For a number of years Wyoming hay-fed steers have been sold for the block, and in many instances this beef has gone to consumers as corn-fed. At the 1904 International Stock Show, in Chicago, Mr. E. J. Bell of Laramie took second prize on a car load of grass-fed cattle which were in competition with the best corn-fed beef that could be produced in the corn belt of the east. The Experiment Station introduced the field pea as food for fattening lambs, and the business of fitting lambs for market on pease promises to become one of the most extensive and best paying stock industries of the state. It has been found, also, that combination rations of barley and alfalfa, of flax seed and alfalfa, with turnips or other roots, produce cheaper gains than corn. Stock feeding will be one of the most remunerative and staple occupations of our farmers.

Dry Farming.—There are about eight million acres in Wyoming which will eventually be brought under irrigation. In addition to this area, there will be a large amount of land which can be profitably cultivated under systems of dry farming. Much has already been done to show the feasibility of such farming, especially in those favorable localities which present the right conditions of soil and soil moisture. There

are drouth-resistant crops, such as Durum wheats, alfalfa, potatoes, buckwheat, barley, rye, etc., which have been proven successful with a small amount of rainfall distributed as is the Wyoming precipitation. There are many opportunities, also, to divert the flood waters of draws and occasional streams for winter irrigation to store water in the soil for the production of crops. While such resources are as yet almost untouched, they offer an inviting field to the man seeking cheap lands which will pay good interest on the investment.

Low Altitude Farming.—Little may be said about the possibilities of farming under irrigation where the altitude is less than 6,000 feet. Some world-renowned crops have been authenticated, such as the prize yield of potatoes of 974 bushels and 48 pounds per acre, produced by Mr. Sturgis in Johnson County; a yield of 132 bushels of oats, produced in Sheridan County; an average of $8\frac{1}{2}$ tons of alfalfa hay per acre for three years, produced on the Wheatland Experiment Farm.

Large areas are being reclaimed in Eastern Wyoming and in the western and northern portions of the state, where the lands lie from 3,500 to 5,000 feet above the sea. Many of these lands are so well protected by surrounding ranges of mountains that crops can be grown which would be too tender for other places of like latitude. These lands and water rights under the new reclamation projects are cheap and cannot fail to greatly increase in value within a short time.

Horticulture.—The gardens of the state are beginning to furnish fresh and unadulterated vegetables for home use. As a general indication of what may be done, we need only cite the fact that at altitudes of 5,000 feet or less peanuts, sweet potatoes, tomatoes and tobacco are successfully produced. Melons, pumpkins, squashes and other equally tender things grow to perfection at all save the high altitudes, and gardens up to 8,000 feet produce a good variety of vegetables of the best quality.

Among fruits the hardier kinds are being grown in all parts of the state. On the Laramie Plains Jacob Lund has an orchard at an altitude of 7,400 feet which matures Wealthy apples each year. Currants, gooseberries, dewberries and strawberries can be grown anywhere that there are agricultural lands.

The horticultural sections of the state are the low altitude lands and the protected valleys of Laramie, Johnson, Sheridan, Fremont and Big Horn Counties. In Fremont and Big Horn Counties two different ranchmen have ripened peaches without other protection than that afforded by hills and tree wind-

breaks. In these counties a large variety of apples are bearing crops of first quality fruit. Among these varieties may be mentioned the Northwest Greening, Gano, Ben Davis, Walbridge, Wolf River, Ganitan, Yellow Transparent, McMahon, Wealthy, Duchess, Pewaukee, White Winter Pearmain, Gideon and others, as well as a large variety of crabs. Several varieties of pears, cherries and plums are yielding good crops. The possibilities of home-making where such fruits and the more useful shade trees succeed will appeal to many.

B. C. BUFFUM.

Mineral Resources.

There are few states in the Union that possess mineral resources as vast and varied as those of Wyoming. The late Prof. Knight of the State University identified 156 of the varieties of mineral noted in Dana's System of Mineralogy as occurring in Wyoming, and this list is constantly being added to as the different formations are opened up and understood.

Gold, silver, copper and lead all have been known for years in almost every mountain range in the state, and the work of the past two years has demonstrated beyond a doubt that these ores exist in commercial quantities.

The crying need of these resources is railroad transportation, as both the quantity and quality are assured facts, and it only remains to get them to market. With the railroads will come the up-to-date mining investor, with means and brains to make a producing mine out of the long neglected prospects.

There is not another Rocky Mountain state with greater possibilities than Wyoming, or that offers better opportunities for mineral investments; certainly none with so much public domain subject to location as mineral land, and, besides, the precious metals, the wealth of coal, oil and natural gas will some day make Wyoming as great a producing and manufacturing state as Pennsylvania is today.

Gold Mining.—Gold mines were first worked at South Pass, Fremont County, in 1867, since which date the industry has amounted to something each year. The annual production has fluctuated from \$25,000 to \$125,000, the total being estimated at \$4,000,000 produced.

The placer mines that were rich enough to be worked with limited means were worked out long ago. Large tracts of placer gold ground, that can only be worked with great expenditure of money and the most modern and economical

devices, remain. These are now owned by large companies, who are arranging to work some of them. The quartz veins, from which most of the gold produced has been taken, are found in all the mountain districts, the most promising of which are as follows: South Pass and Atlantic, in Fremont County; Seminoe, Medicine Bow and Sierra Madre Mountains, in Carbon County; Black Hills, Crook County; Shoshone Mountains, Big Horn County, and the Laramie Hills.

Silver and Lead.—These metals are found in small quantities in all the prominent ranges. Galena is the usual ore carrying silver, but at the Esterbrook mine, in Northern Albany County, a vein of cerusite or silicious lead carbonate has been found. The silver values vary from ten to six hundred ounces per ton, and the lead from twenty to sixty per cent in commercial ores. Shipments have been made from camps in Crook, Big Horn, Albany and Laramie Counties.

Copper.—During the past five years copper in commercial quantities has been found in nearly all of the thirteen counties of the state and development work is being actively pushed. The principal ore is usually a chalcopryite or yellow sulphide of copper, associated with the rarer forms. These forms are usually covered by a capping of oxidized iron, in which the oxidized forms of copper, usually the blue and green carbonates, are found. The Grand Encampment Copper District, in Southern Wyoming, is the leading producer, and active camps are established in the Laramie Hills, Shoshone Mountains, Owl Mountains, the Wind River Range and the Big Horn Mountains.

Coal.—Coal mining has been the leading mineral industry in the state, and will, in all probability, continue in the front rank for a time, though copper is fast gaining upon it. It had its origin with the advent of the transcontinental railroad, and has increased with the development of the state, until today it employs 10,000 workmen and has a production of 4,996,828 tons of coal per annum.

The kinds of coal vary from a pure lignite to a high grade long-flamed bituminous variety. The best grades of coal are low in sulphur and ash, and are excellent fuels for locomotives, general steam making, domestic purposes and gas production.

A semi-anthracite was discovered in Johnson County in 1887. Coking coal has been discovered in two or three localities, and seventy-four Beehive coke ovens are operated at Cambria, Weston County, having an output of over 20,000 tons per annum. All coke so far manufactured in this state has been made at Cambria, and Wyoming stands eleventh in the coke-producing states.

A Table of General Information Relating to the Wyoming Coal

GENERAL INFORMATION			ASSAYS				KIND OF COAL
Field	County	City	Water	Vol. Matter	Fixed Carbon	Ash	
Rock Springs.....	Sweetwater	Rock Springs	5.38	36.42	55.60	2.60	Bituminous
"	"	Hopkins.....	5.55	36.95	55.70	1.80	"
"	"	Black Butte.....	14.23	31.00	49.85	4.92	Lignite
"	"	Mine No. 1.....	4.11	40.10	53.41	2.38	Bituminous
Spring Valley.....	Uinta.....	Spring Valley.....	5.46	39.42	52.32	2.80	"
Cumberland.....	"	Cumberland.....	4.38	39.25	52.60	3.77	"
Evanston.....	"	Almy.....	7.37	34.88	48.75	9.00	Semi-Bituminous
"	"	Red Canon.....	7.42	36.08	48.50	8.00	"
Rawlins.....	Carbon	Rawlins.....	6.55	32.85	54.00	6.60	Bituminous
Kindt.....	"	"	4.87	35.68	55.15	4.30	"
Hanna.....	"	Hanna.....	8.09	44.52	43.84	3.55	Semi-Bituminous
Carbon.....	"	Carbon.....	7.42	35.43	48.30	8.85	"
Glenrock.....	Converse.....	Glenrock.....	13.82	33.03	47.75	5.40	Lignite
Cambria.....	Weston.....	Cambria.....	5.72	40.13	43.65	10.50	Bituminous Coking
Buffalo.....	Johnson	Buffalo	13.55	35.05	45.30	6.10	Lignite
Sheridan.....	"	Highby.....	13.05	37.55	44.70	4.70	"
"	"	Monarch.....	15.40	36.38	42.32	5.51	"
Brier Hill	Crook.....	"	5.25	41.70	44.98	8.07	Bituminous
Dutton.....	Albany	"	11.85	34.65	47.30	6.20	Semi-Bituminous
Twin Creek.....	Uinta.....	Kemmerer.....	3.53	43.58	51.36	1.53	Bituminous
Gros Ventre	"	"	8.50	41.15	46.95	3.40	"
Seminole	Carbon	"	11.01	33.27	48.48	6.24	Semi-Bituminous
"	Big Horn.....	Thermopolis.....	9.75	33.25	50.30	7.00	Lignite
Lander.....	Fremont.....	Lander	11.40	36.60	47.60	4.40	"
Owl Creek.....	"	Lander	5.68	32.88	46.58	14.86	"
Casper.....	Natrona.....	"	11.30	32.10	53.55	3.20	"
Glenrock.....	"	Big Muddy P. O.....	11.50	38.40	43.70	6.40	"

The coal fields are so universal that commercial coal is known to exist in every county, and, in all but one, coal mines are worked. The area of workable coal land is over 20,000 square miles. The coal veins are numerous. It is not an uncommon thing to find six or eight workable veins in a single field. In thickness the seams vary from a few inches to 75 feet. The coal mines operated at present have working veins varying from four to forty feet. The coal lands are owned, to a large extent, by the government, but are subject to location. Already three great railroads have penetrated these fields, but the industry has only started, and by the close of another quarter of a century Wyoming will be producing not less than 10,000,000 tons of coal per annum.

Wyoming stands twelfth in the list of coal-producing states, and while the amount produced in other states has remained stationary in the past two years, the amount produced in Wyoming has increased twenty per cent.

Statement of Coal Output for Year Ending September 30, 1904.

DISTRICT NO. I.

Owner.	Address.	Mine.	Tons, 1904.	Men; 1904.
Union Pac. Coal Co.	Rock Springs...	No. 1..	431,119	542
Union Pac. Coal Co.	Rock Springs...	No. 7..	270,929	328
Union Pac. Coal Co.	Rock Springs...	No. 8..	301,276	328
Union Pac. Coal Co.	Rock Springs...	No. 9..	265,323	337
Union Pac. Coal Co.	Rock Springs...	No. 10..	336,946	275
Union Pac. Coal Co.	Cumberland...	No. 1..	457,689	423
Union Pac. Coal Co.	Cumberland...	No. 2..	445,332	341
Union Pac. Coal Co.	Spring Valley...	No. 1..	114,570	180
Union Pac. Coal Co.	Hanna.....	No. 1..	262,102	485
Kemmerer Coal Co.	Kemmerer...	No. 1..	187,312	265
Kemmerer Coal Co.	Kemmerer...	No. 3..	50,463	78
Diamond C. & C. Co.	Diamondville...	No. 1..	331,549	296
Diamond C. & C. Co.	Diamondville...	No. 2..	181,574	188
Diamond C. & C. Co.	Diamondville...	No. 4..	14,140	8
Central C. & C. Co.	Rock Springs...	No. 2..	189,497	2,520
Central C. & C. Co.	Rock Springs...	No. 3..	106,309	1,223
Rocky Mt. C. & C. Co.	Almy.....	No. 5..	7,106	20
Kemmerer Coal Co.	Willow Creek...	No. 4..	500	10
Kemmerer Coal Co.	Willow Creek...	No. 5..	2,850	10
Totals, District No. I.....			3,956,586	7,857

DISTRICT NO. 2.

Owner.	Address.	Tons, 1904.	Men, 1904.
Sheridan Coal Co.....	Sheridan, Wyo....	429,153	500
Cambria Fuel Co.....	Cambria, Wyo....	396,657	600
Glenrock Coal Co.....	Glenrock, Wyo....	60,440	135
Cole Creek Coal Co.....	Big Muddy, Wyo..	12,087	62
Stillwell Coal Co.....	Aladdin, Wyo.....	8,306	30
Wyoming Coal Mining Co.	Monarch, Wyo....	108,599	....
Carney Coal Co.....	Carneysville, Wyo.	4,936	....
Mined at Thermopolis, Meteetse, Cody, Sheridan, Douglas, Casper, Lander and other places not reported (estimated).....		20,064	....
Totals, District No. 2.....		1,040,242	1,320
Totals for state, 1904.....		4,996,828	9,177
(From reports of Coal Mine Inspectors, 1904.)			

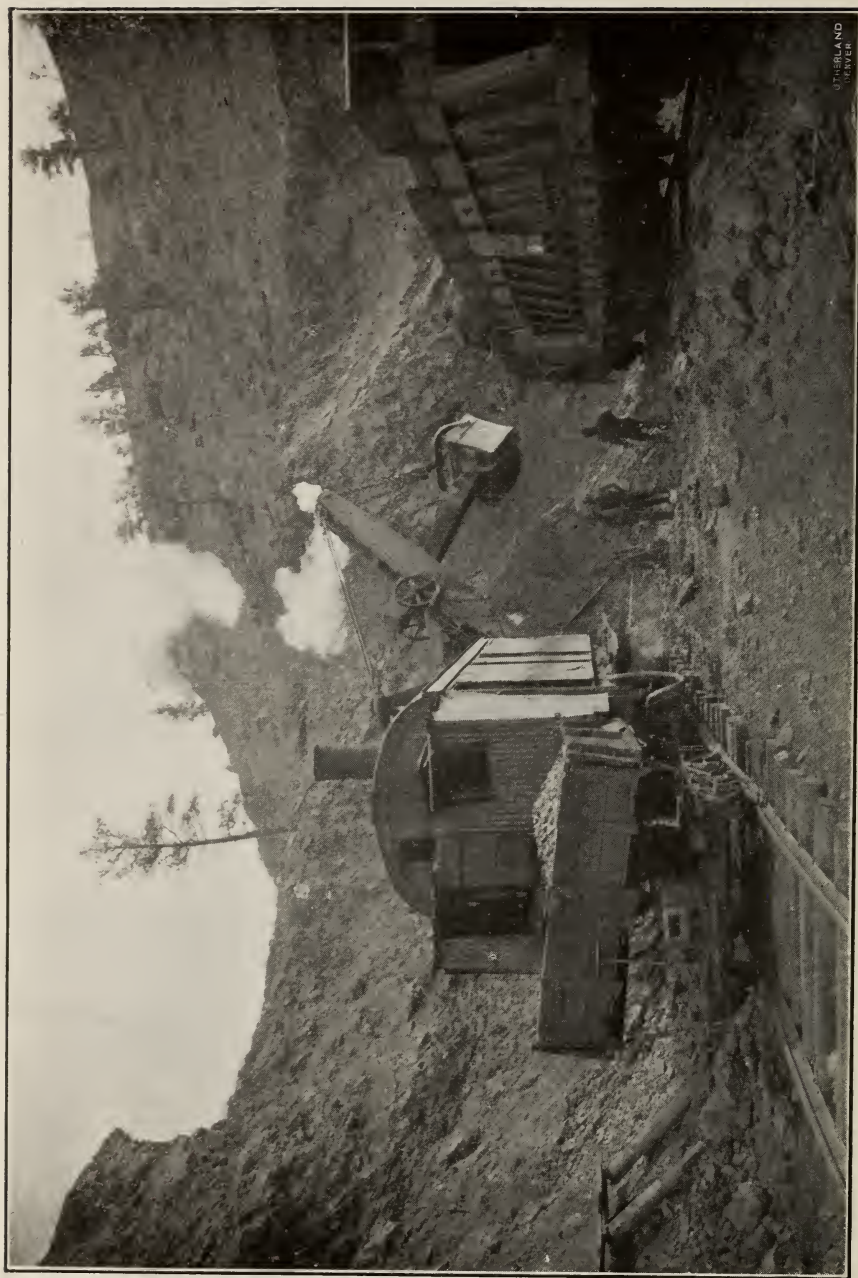
Natural Gas.—Accompanying the oil fields are numerous natural gas horizons. The gas pressure in the oil wells near Lander is very great and gas escapes are found at or near most of the oil springs. At Brenning Basin, near Douglas, in Converse County, a flow of gas has been struck in several wells, at a depth of 500 feet, and the gas has been piped and used for fuel and light in the vicinity, a pressure of 300 pounds per square inch having been noted. In the eastern part of Fremont County there are two natural gas escapes that are wonders. Some prospectors have dug shallow shafts and curbed them up with logs; the shafts are partially filled with water and the gas escapes with such violence as to cause the water in them to boil as though in a cauldron. There are numerous anticlinals in the state that are not associated with the oil districts, where large flows of gas may be looked for.

Bituminous Shale.—In the Green River Valley and at Rock Springs there are great bands of rich bituminous shale, that equal the shales of Scotland, where an army of men are employed and the production is sold for millions of dollars per annum. The shales are burnt in a retort, and the products saved are gas, oil, tar and ammonium sulphate. The richest of these shales assay 45 per cent of volatile matter.

Volcanic Ash.—In several localities in Wyoming volcanic ash has been found. In Albany County, near Laramie, there is a bed four feet in depth. It is almost white and is so fine that the greater portion of it will pass through a 100-mesh sieve. Samples of equal purity have been examined from Carbon and Sweetwater Counties. This material is used for scouring purposes. It is the base of sapolio, and is also used in the geyserite soap.



GRAND ENCAMPMENT—SMELTER AND TRAMWAY.



MINING AND LOADING IRON ORE, NEAR GUERNSEY, LARAMIE COUNTY.

OTIS AND
BROS.

Graphite.—Veins of graphite are known at French Creek, Plumbago Canon and Halleck Canon, in Albany County, and in the Indian Grove Mountains, in Carbon County. The veins are large and easily accessible. Analyses of samples from the various localities show the carbon contents to vary from 40 to 60 per cent. So far as known, the ore is of the amorphous variety and would make good fire-proof paint, stove polish or graphite crucibles.

Asphaltum.—Along the north side of the Rattlesnake Mountains there are several deposits of asphaltum that occur below the oil springs. There is also another bed on the Shoshone Reservation, east of Fort Washakie. This has been formed about an oil spring and contains several thousand tons. The quality is excellent, quite free from foreign matter, and it would make a splendid paving material.

Manganese Ores.—Ores that fall under this class have been found in Albany, Crook, Sweetwater and Uinta Counties. The development is only slight, since the discoveries are too far from railroads to warrant shipments. The ores are good grade, and are found in good sized veins. Samples from different localities vary from 40 to 55 per cent manganese.

Epsom Salts.—Epsom salts can be found in small quantities throughout the arid region, but in Wyoming it is found in large beds. Near Rock Creek there is a depression containing about ninety acres that is covered with this salt. The exact depth is not known. In this immediate vicinity there are several other beds, the total area of the Epsom Salt Lakes being given at 160 acres. The salt is as pure as the commercial product that sells in our drug stores for ten cents per ounce. These deposits are near the railroad, and, if properly handled, should enable a company to control the Epsom salt trade of America.

Building Stone.—Building stones of innumerable varieties are common throughout the state. The sandstone quarries at Rawlins, Carbon County, have a large output, which is shipped to Colorado, Utah and Nebraska. The capitol and federal buildings at Cheyenne and the State Penitentiary are built of this stone. In Laramie County the Iron Mountain quarries furnish a beautiful white stone, which is much in favor. Granite, sandstone, limestone, quartzites, serpentine marble and marble onyx are included in the varieties.

Gypsum.—This mineral is very common and is found in all varieties. Beds varying from 20 to 100 feet in thickness are exposed along the mountain ranges. The mineral is very pure, and can be utilized for purposes where gypsum is required.

Plaster of Paris.—The Rocky Mountain Plaster Company is operating a plaster mill at Red Buttes. There is room and material in sight to supply a thousand mills; in fact, Wyoming could furnish the world with plaster of paris for a thousand years, and then not consider the beds exhausted.

Natural Plaster.—In a few localities deposits of what has been called a natural plaster have been found. The mineral occurs in superficial deposits, varying from two to six feet in depth. It is pulverulent and has a light gray color. When a portion of the water has been driven off, it sets and forms a very hard cement.

Clays.—Pressed and common brick are manufactured in the state, but at present there are no other clay industries. The clay beds are in abundance and are found in every county in the state. Common brick clay, fire clay, tile and terra cotta clay and potters' clay are found in thick beds in the sedimentary rocks, and not in superficial deposits, as they are usually seen in the northern and eastern states. Bentonite, or "soap clay," is found in many parts of the state, and shipments have been made from the beds at Rock Creek, Albany County, and Newcastle, Weston County, a number of cars being shipped every year from each place. This clay is used as an adulterant, as a filler in paper making and for medical purposes, being worked up and sold under the name of "Antiphlogistine."

By analysis this clay contains silica, alumina, iron, magnesia, sulphur and water, samples having shown over 89 per cent of silica and alumina, 1 per cent of iron, 3 per cent magnesia, $1\frac{1}{2}$ per cent lime and sulphur, and 6 per cent water. Some of these deposits have no iron, magnesia or sulphur. One of them has 3 per cent iron and 3 per cent magnesia.

Nearly every small town has brick yards in the immediate vicinity, as the clays are universal, and some remarkably fine commercial brick are made. The clay also makes very fine tiling for floors, fireplaces and all kinds of pottery and piping.

Tin.—Black oxide of tin has been known in veins and as stream tin in the Wyoming portion of the Black Hills for many years. Tons of stream tin have been mined and sold. The veins are slightly developed. There are good veins of tin of average richness, and before many years the tin mines of Dakota and Wyoming will be worked. Wyoming gained a medal at the World's Fair for her exhibit of stream tin.

Salt.—Near Cambria, Weston County, a plant has been built to manufacture salt from Salt Springs, the water of which contains 22 per cent salt, and other springs equally fine are noted in Johnson and Uinta Counties. In the latter place salt is produced for local consumption.

Quartz.—The Laramie Mountains abound in large veins of pure quartz. When ground, it is valuable for glass making.

Glass Sand.—There are numerous places in the state where glass sand is found. The beds near Laramie have been worked and proven.

Mica.—Muscovite mica, the mica of commerce, is very plentiful in Wyoming, but there are only a few localities where it has been found in "book" of sufficient size to warrant mining. In Whalen Canon, some eight or ten miles from Hartville, and at Grand Encampment, there are numerous large veins of feldspar containing first-class mica. The former has been worked to some extent and a small shipment made. Sheets squaring six inches have been taken out near the surface. It is first quality in every respect.

Feldspar.—Orthoclase feldspar occurs in large veins in Whalen Canon. It is free from detrimental minerals and is suitable for all purposes where orthoclase could be used.

Sulphur.—Extensive deposits of native sulphur are known in Uinta County. The crude brimstone assays from 40 to 70 per cent of sulphur. There are also very extensive deposits above Cody, on the Shoshone River, and on Sunlight Creek, north of Cody.

Bismuth.—Bismuth ore of rare purity has been mined at Jelms Mountain, and shipped to the east for reduction. The ore is a mixture of carbonates and metallic bismuth, and assays from 50 to 65 per cent.

Sulphate of Aluminum.—This mineral, which is usually called native alum, occurs in extensive deposits in Sweetwater and Big Horn Counties. It is the principal salt used in manufacturing commercial alums, and for this purpose it should be used in connection with the natural soda.

Fibrous Talc.—A very large vein of fibrous talc exists in the range of mountains west of Wheatland. The quality is excellent. This mineral is used extensively in the east, and as soon as the proper transportation can be furnished the Wyoming deposits will be worked.

Decomposed Granite.—Some seven years ago the Union Pacific Railroad Company commenced loading decomposed granite from a point near Sherman and hauling it out as ballast. It was found to be far superior to any other stone for this purpose, but it was also, to some extent, sold for road building in cities, a use to which it is well adapted.

Natural Pigments.—Soft iron ores have been used for red paint for years. For many years paint mills were operated at Rawlins. The Brooklyn bridge was originally painted with this paint. More recently the ore has been shipped to other states to be ground. The soft hematite ores are in large bodies and make a first-class paint. Ochres of various shades are known, but the beds have not been worked. Graphite and the low grade asbestos that would make an excellent fire-proof paint are found in large bodies.

Semi-Precious Stones.—The semi-precious stones are in abundance. Quartz crystals, agates, jaspers, moss-agates, petrified wood, garnets and beryls are the important ones. The moss-agates are the best found in the world. Thus far no precious stones have been reported.

Asbestos.—There are two minerals called asbestos, one a serpentine and the other amphibole. The latter is the true asbestos, but the former is sold under the same name and used in the same way. The asbestos that is found in Wyoming, with the exception of small specimens, belongs to the serpentine variety and is known as crysolite. Valuable deposits of this mineral have been found in Natrona, Albany and Carbon Counties. Natrona County has marketed some of the mineral, and with a railroad into the central portion of the state, a trade in this mineral can readily be built up, as workable deposits are known to exist in the Seminoe Mountains.

Natural Soda.—Extensive deposits of natural soda are known in Carbon, Natrona and Albany Counties. Numerous springs contain considerable soda, and at Green River a well yields a saturated solution of sodium carbonate, which is shipped by the car load. The deposits vary in size from a few to one hundred acres, and the soda ranges from a few inches to sixteen feet, and possibly more. These deposits are chiefly sodium sulphate, but there are carbonates and bi-carbonates in some localities. Along the Sweetwater River there are deposits that contain 60 per cent carbonate of soda. The sulphate, when dried and calcined, has been sold in the east for glass making, and was used at the Laramie Glass Factory. With proper machinery, these great beds of soda can be utilized and would bring in a large revenue.

The most valuable natural soda discovered in Wyoming is what is known as sodium carbonate, or the sal soda of commerce, and can be derived in inexhaustible quantities from wells, averaging a depth of two hundred feet, at Green River, the county seat of Sweetwater County, and on the line of the Union Pacific railroad. Samples of water taken from numerous wells at Green River yield an analysis of 20 per cent of

sal soda crystals. Prof. Gilbert C. Wheeler of Chicago, a chemist of acknowledged reputation, furnishes the Green River Fuel and Oil Company with the following analysis of the crude soda of Green River:

Silica	0.51
Iron and aluminum	0.42
Calcium	0.64
Magnesium	0.27
Insoluble residue	0.23
Water	22.57
Anhydrous carbonate of soda	75.36

100.00

This is practically more pure than the sal soda of commerce.

Mineral Springs.—Wyoming is prominent for her mineral springs. If we take into our estimate the Yellowstone Park, this alone surpasses the rest of the world in the number and magnificence of its waters. The mineral springs include hot, cold, sulphur, iron and the alkaline earths, and genuine mud springs. Notable ones, but by no means the most important, are at Death Lake, where they number more than four hundred.

A group of some fifty famous hot springs in the Platte Valley at Saratoga, in Carbon County, have a temperature of 130° F., have been extensively improved and have been used for twenty years to the great benefit of the invalid visitor.

At Thermopolis, in the Big Horn Basin, the hot springs have an analysis nearly identical with the waters at the Hot Springs, Arkansas. These are protected by state law, and are under the control of the Board of Charities and Reform.

A famous hot spring is located two miles west of Fort Washakie, on the Shoshone Reservation. This spring is 320 feet long by 250 feet broad, with an average temperature of 149° F. The minerals held in solution are medicinal. It is held in great repute by both whites and Indians as curative of rheumatism and neuralgia.

In Beaver Canon, north of Sheep Mountain, in Carbon County, a sulphur spring, with a temperature of 90° F., is found, and near by are cold springs, which contain soda in solution, sulphur, iron, sulphuretted hydrogen and carbonic acid. Another equally large, of sulphur, having a temperature of 97° F., exists near Lander, Fremont County, and is much sought by the people outside of the state suffering with stomach, kidney, liver and bowel disorders.

A spring with a temperature of 108° F. is located ten miles below old Fort Laramie; another at the head of West

Horse Creek, whose temperature is 104° F.; still another in the Platte Canon, at the east end of the Seminoe Mountains, having a temperature of 98° F. There are many other springs scattered throughout the state, whose analysis suggests that they possess valuable medicinal qualities, but, owing to the limited number of people, lack of transportation and consequent small demand for mineral water, it has been impossible to develop many of them.

Limestone.—The unprecedented demand for a pure limestone, to be used in the sugar beet factories in Colorado, has developed a trade at Laramie, Albany County, and Hartville, Laramie County, and some thousands of tons are shipped annually from these quarries. The limestone is very pure, containing 98 per cent calcium carbonate, with very little silica, or injurious materials. This same stone exists in many other parts of the state, and factories may be assured of a constant supply in almost any locality where the beets can be grown.

Iron.—Second to those of no state in the Union are the deposits of iron ore. Prospecting along this line has not been carried on to any extent, and only iron districts reasonably near the railroad have received any attention. The greatest deposits are the red hematite, quite free from sulphur and phosphorus, and low in silica. The only districts where development or mining has been carried on are Hartville, Rawlins and Seminoe. In these camps are large deposits of soft ore, which makes an excellent pigment. The hard ores are found beneath the surface in bodies varying from ten to one hundred feet in thickness. Rawlins and Hartville or Guernsey have furnished thousands of tons of ore to be used by the Salt Lake and Denver smelters as a flux for lead and copper smelting, and two railroads have been built to the Hartville mines. Besides the hematite, there are great deposits of magnetite in the Laramie Mountains, and beds of clay ironstone in the cretaceous rocks in several localities. Hematite ore has been found in Crook, Uinta, Johnson, Fremont, Big Horn, Albany and Sheridan Counties. The ores examined are of exceptional purity.

Iron Mines at Guernsey.—The Hartville iron range in Laramie County, now known throughout the country as containing the finest and most extensive deposits of Bessemer steel ores in the world, has become a scene of vast operations. Two railroads, the Burlington and the Colorado and Wyoming, have been built into these fields. The mines now being worked are owned by the Wyoming Railway and Iron Company and held under lease by the Colorado Fuel and Iron Company.

This company has a capital of \$25,000,000, and is rapidly enlarging its plant at Pueblo, Colo., making it one of the largest in the country. The mines are located at Sunrise, in the center of the iron belt, where a town has been built, and the work is progressing on an extensive scale.

The ore is mined in great open cuts, where the ore is blasted down from the sides and loaded into cars by steam shovels, three of which are in active use daily, the cars being run into the cuts on side tracks from the main railroad and the ore shipped direct from the cuts with as little handling as possible. In this manner over 600,000 gross tons of ore have been mined, which, at a mine value of \$1.50 per ton, gives \$900,000 worth of crude iron ore. A three-compartment shaft, 350 feet deep, has been sunk, and three levels run to develop the underlying beds of iron ore hitherto neglected. This department will greatly increase the output of the mines and be a permanent part of the work.

The known area of the iron belt, which begins at Guernsey, on the south, and runs to the head of Whalen Canon, in a northeasterly direction, ten miles, with an average width of three miles, covers thirty square miles. The greatness of the deposit is shown by the fact that, although the Colorado Fuel and Iron Company has a lease of seventy-two patented claims, the present enormous output is obtained by working only two mines.

The ores are exceptionally pure and of the highest grade known, showing from 65 to 68 per cent metallic iron, from $2\frac{1}{2}$ to 5 per cent silica, and are practically free from sulphur and phosphorus.

Rawlins Hematite.—Two miles north of Rawlins, Carbon County, there is a large deposit of red hematite ore, occurring in a metamorphosed sandstone capped with limestone. The ore is remarkably pure, and in this vicinity there are several other locations which contain similar deposits.

Analysis of Rawlins Hematite.

Peroxide of iron.....	94.22
Silica	1.71
Sulphur	1.24
Phosphorus	Trace
Titanic acid	None
Water	37
Ca., Mg. and Mn.....	No estimate

Seminole Iron Deposits.—One of the largest deposits of iron in Wyoming occurs in the Seminole Mountains, at the foot of Bradley's Peak, Carbon County. Bradley's Peak has

been called a mountain of iron ore, containing not less than 1,500,000 tons, and when development is begun here this locality will furnish an important part of the iron ore to be smelted in Wyoming, as this ore can be mined and loaded in the cars for fifteen cents per ton.

The following comparative analyses show the superiority of Wyoming iron ores over other iron ores of repute:

	Seminole.	Pilot Knob.	Lake Superior.
Iron	67.66	59.15	60.69
Oxygen	28.99	25.23	26.01
Silica . . . . .	.72	13.27	9.82
Lime	1.23	.21	.57
Magnesia . . . . .	.68	.14	.24
Alumina . . . . .	.21	2.19	1.64
Titanic acid . . . . .	.04	....	....
Phosphoric oxide . . . . .	....	.04	.14
Sulphur . . . . .	....	....	.02

Four-ninths of the phosphoric oxide is the amount of phosphorus.

GOLD DISTRICTS.

The South Pass Gold District, Fremont County.

This district is situated in the south central part of Fremont County, Wyoming, near the southern end of the Wind River range of mountains.

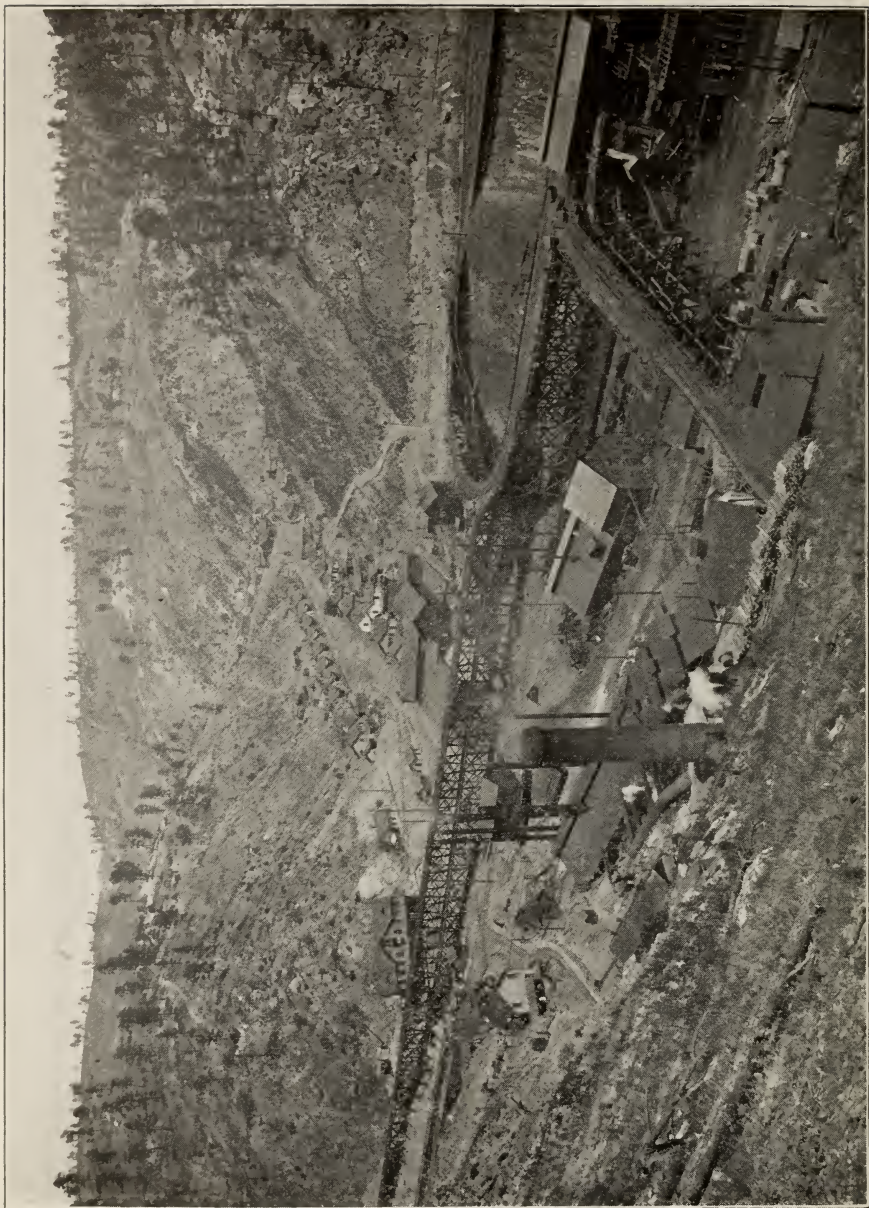
The completion of the new line of the Burlington road to be built up the Big Horn River from Garland to Lander, and that of the Chicago and Northwestern to be built from Casper to Lander, will bring this district within thirty-five miles of a railroad, and it is more than possible that branches will be run to the mines and greatly facilitate the operation of properties in this section.

Gold was discovered in this region in 1842, and from that time until 1869 efforts were made to work the rich placers known to exist there, when the great rush to South Pass occurred in the latter year, and the placers rich enough to pay when worked on a limited crude scale were promptly worked out and the miners sought other opportunities in the then new fields of Colorado and Montana.

Geology.—The district may be said to consist of an island of metamorphic schists of the Algonkian period lying upon the granites of the Archean and with several intrusions of granite and dyke rocks in the schists at different localities. The granites of this section of the Wind River Range are usually the common red feldsitic granite, and here show an occasional gray granite island or band, usually of limited extent.



THERMOPOLIS HOT SPRINGS.



THE MODEL COAL CAMP OF CAMBERIA.

The schists show for a distance of about thirty miles long, from ten to twelve miles wide, the longer axis bearing northeasterly and southwesterly, in the same general direction as the strike of the schists, and with a general dip to the north, varying from 45 degrees to the perpendicular. Around these schists are the granites on the northwest and the succeeding sedimentary formations on the northeast and the tertiary formations on the southerly sides.

Nearly all the rocks of this region, but especially the above mentioned schists, show strong evidence of alteration and change, in many instances giving an appearance entirely foreign to the character of rock, but an examination with an ordinary field lens is often sufficient to determine the true character at once. This altering material is usually silica, and where the rocks are weathered as on an exposed outcrop, a hard quartzose character is noted, and these are frequently called "dykes," but are simply altered schists and frequently carry gold values. Dykes occur in these schists, especially at the old Miner's Delight mine at Peabody Hill, where diorite and diabase dykes are noted; at the Mary Ellen Hill, near Atlantic; at the Carissa at South Pass, and along the northwesterly edge of the schist in the vicinity of the Little Joe, and at Gold Creek.

At the Miner's Delight dykes of porphyritic material are noted, and these extend to the "Rustler belt," north of Atlantic City, where the Mormon Crevice and Poirée estate properties have produced very rich ore.

The Carissa Mine at South Pass.—This property, located in 1867, has been a phenomenal producer for many years, and development work is being carried on at the present time. The development consists of some 2,300 feet of drifting, etc., with a shaft 384 feet deep; following the dip to the vein, equipped with hoist and necessary appliances for handling the ore. The Carissa ore occurs in quartz lenses, lying in the schist, having the same dip and strike as the schist, and these lenses occur at irregular intervals.

Associated with the quartz lenses are bodies of mineralized schist carrying pay values in gold, and lying between or near the lenses have been found schist ores of very high grade, but with the usual intervals of lower grade material in the same ore.

Until recently the development of these ores has been carried on on the high grade lenses only and the low grade ores practically ignored, owing to lack of facilities for treating them profitably, but during the past year a cross-cut has been run west from the lower or 400 level and the occurrence condition of these low grade ores determined. This cross-cut is 180

feet long and cut through a series of quartz lenses and schist leads, which were found to vary in value from a trace to \$50 per ton gold, but the free condition remained unchanged as in the other parts of the mine. Tests on this work showed an average mill value of \$6 per ton for the whole length of 180 feet.

This is the most important work accomplished in the district for many years, as it demonstrates the existence of great bodies of low grade ore capable of treatment on a large scale and indicates the course to be pursued in the other mines of the district.

In the upper portion of the Carissa workings the usual oxidized ores were found, and these were very rich, as shown by the early history of the mine. As development proceeded the oxidized ores passed out and the sulphide forms came in, being mostly arsenical pyrites, but experience in milling these ores has shown the free gold character of the ore still pertains, and on the lower level from 60 per cent to 90 per cent of the gold values may be saved on the plates and ore is frequently met with that shows free gold associated with the pyrites, both in the quartz and adjacent schists. The ore is being treated in a ten-stamp mill, with amalgamating plates and concentrating tables.

The Dexter Works at Atlantic.—Atlantic City is the working headquarters of the Dexter Mining and Development Company of Rochester, N. Y. They have recently added to their original large holdings and are now operating the Tabor Grand, the Bryan, the Dexter Tunnel and Garfield, besides a number of smaller works.

This company holds placer ground on Rock Creek, consisting of 1,600 acres of patented placer ground, and controls the whole bed of Rock Creek to its junction with the Sweet-water River, about 3,000 acres of placer claims held by location in the usual manner. The Dexter Company has made extensive tests in the bed of this creek by hydraulic elevators and other mechanical means for handling the gravel, and will put in dredges as the result of these experiments. The water for this work is secured from Christina Lake and Rock Creek by a system of about twenty-five miles of ditches, flumes, etc. An interesting feature of these experiments is the high assays obtained from the black sand after the placer gold has been taken out, the remaining sand assaying from \$400 to \$800 per ton.

The Dexter Tunnel is being driven to cross-cut several leads, and will cut these different leads at depths varying from 217 feet to 395 feet in a total length of 2,800 feet, some

six leads crossing the line of the tunnel, which has reached a length of 1,500 feet and has cut several leads of low grade ore. It is being rapidly pushed ahead by air drills and a complete mechanical plant.

This company has installed a hoist and shaft house on the Rose or Bryan mine, on the line of the Dexter Tunnel, sunk a shaft on the vein to connect with the main tunnel, and is running drifts on the vein on two levels.

A new mill has been erected by the Dexter Company at a point on Rock Creek just below Atlantic to treat both their own and custom ores, extensive experiments having been made during the past year to determine the best method of treatment. This mill, which started in the spring of this year, is of 150-ton capacity, using twenty 1,050-pound stamps, with amalgamating plates and having complete cyanide department for saving values other than free gold.

The Miner's Delight mine, abandoned for many years, after a production record of over \$1,000,000, has cleared its title and is now in a fair way to be opened up again on a commercial scale.

The vein is a fissure from four to six feet wide, associated with the coarse crystalline porphyry noted above and contained very rich gold values, but was not developed over 250 feet in depth, as far as can now be ascertained.

Lewiston.—At this camp, which was opened up in 1879, when the famous Burr mine was discovered, development has been slow for the past few years, but this season prospecting is again active, and a number of lenses of quartz have been found on Strawberry Gulch, which show the characteristic free gold condition of the Burr and other famous properties.

Productions.—The amount of gold produced from twenty-eight properties in this district since its discovery is \$3,728,000. The gold taken from the great placers in the early days of the district, before anyone thought of statistics, can only be estimated and is placed at from \$2,000,000 to \$3,000,000. In this locality at the present time there are fifteen properties working, employing one hundred men.

There are fifty meritorious properties in the South Pass District that would pay handsomely on the development expenditure, and it is certain that this district will be heard from as a gold producer in the next few years.

Other Gold Camps.

The other gold producing districts in the state are scattered, and at present are limited in area. Placers are still worked on a small scale on the head waters of Snake River, in

the southern end of Carbon County, and at Welcome Gulch, in the eastern edge of Crook County, but the returns are not available. In the latter locality lode mining has been active in the past year, where the Golden Empire Mining Company has had forty men constantly employed doing development work. Tunnels aggregating 7,000 feet long have been driven and a shaft 200 feet deep sunk to supply ore for a twenty-stamp mill. The formations noted are the fine grained schists, granites, etc., with some intrusions of trachite and allied rocks, overlain with limestone and the succeeding sedimentary formations.

Returns of gold working properties are received from the Sunlight mines, in Big Horn County; from Kirwin, on the head of Wood River, and the South Fork of the Shoshone River, in the same county.

A number of placer works are scattered along the waters of the streams in the Wind River and Owl Mountains in Fremont and Big Horn Counties, Gros Ventre in Uinta County, and in the Big Horn Mountains west of Sheridan some properties have been worked for gold in the cement deposits on Bald Mountains.

At Centennial, Gold Hill and Jelm Mountain, in Albany County, there are a number of properties working for gold alone.

Placers are well known in Carbon, Albany, Big Horn and Fremont Counties, and thousands of dollars have been taken out in the past.

COPPER DISTRICTS.

Grand Encampment District.

The district popularly known as the "Grand Encampment" country lies in the southern part of Carbon County and the southwestern corner of Albany County, south of the main line of the Union Pacific railroad.

Mining has been carried on in this region from the earliest known period of the state's settlement, but the first permanent work was in 1872 in the Kurtz-Chatterton property on Copper Creek, west of where Encampment now stands. It was not until 1897-8 that the district became prominent by reason of some rich gold ores found in Purgatory Gulch, a small tributary of the South Fork of the Grand Encampment River, and the town of Grand Encampment was started.

The discovery of the Ferris-Haggarty copper mine on the North Fork of Battle Creek followed in the winter of 1898, and attention was then turned to copper, with the result that the region is being thoroughly exploited and bids fair to become a permanent copper producer.

The district is somewhat irregular in shape. The tract embraced in the known mineralized country extends along the Wyoming-Colorado state line, easterly and westerly, for a distance of about eighty miles, and northerly and southerly for a distance of from fifteen miles at Encampment to forty miles at Elk Mountain, near Saratoga, comprising about 2,000 square miles of mountain and valley.

The North Platte River, which rises in Colorado, in this locality flows northwesterly and divides the district into two distinct halves, with a valley some fifteen miles wide lying between and watered by numerous tributary streams on each side. Parallel with the river are mountain ranges on either side, that on the east being known as the Medicine Bow Range, and with this range a series of approximately parallel or connected smaller ranges, such as Elk, Coad and Wood Mountains.

On the west is the Sierra Madre Range, composed of a number of similar ranges, known by various local names, and these form part of the great Continental Divide.

Geology.—The Sierra Madre Mountains consist of an irregular core of granite, with smaller islands and spurs of the same material showing both in and through the associated metamorphic formations. The granite is usually of a reddish feldspathic variety, in many instances much altered, and showing little quartz or mica, but in others showing a predominance of quartz, inclining to the gray granites of Colorado, and frequently showing strong evidences of metamorphism, especially in the outcrops, and which is usually limited in extent.

The metamorphic formations consist principally of Algonkian schists, usually lying on the granites and having a varying dip and trend or direction in different parts of the district. These schists are of a number of varieties, some of which are local or limited in extent, the usual schist being a fine grained black mica schist, and fine hornblende and tourmaline schist in bands varying from a few feet to several hundred feet in width. Associated with these varieties have been noted muscovite or white mica schists and gneiss, cerisite schist, garnet schist on Upper Cow Creek, chlorite schist and amphibolite schist in various localities.

The dyke rocks noted are mainly diorites, some diabase and allied dark colored dyke rocks. These dykes vary in size from a thin band a few inches thick to a huge sheet of several hundred feet in thickness, and generally lie conformably with the adjacent schist, having the same trend or direction and the same dip, but instances are noted, as on Upper Cow Creek and near the Syndicate on Savery Creek, where the dykes cut across the formation at a varying angle. These dykes are also

noted at many places in the granite near the New Rambler on Douglas Creek and near Encampment and Battle.

Associated with the schists and diorites are ledges or bands of quartzite, which lie conformably with the including schists, as far as now known, as at the Ferris-Haggarty mine and at Bridger Peak, and are usually of considerable extent.

In many instances the foregoing rocks (schists, dyke rocks and quartzites) often show an extensive and sometimes a complete metamorphism and change from their original condition and composition, leaving only the structure as a means of identification, the composing minerals being replaced by silica and lime, as the schists near the Ferris-Haggarty are largely replaced by silica, and by lime on Jack Creek and at the Mohawk, on the North Fork of the Grand Encampment River.

The Snowy Range, in the Medicine Bow Mountains, is distinct in formation from the adjacent country, and consists of trachite and quartzites, with an occasional dyke of porphyry.

On either side of the Medicine Bow Range the carboniferous limestones are noted, with the succeeding sedimentary formation dipping away from the main range, until covered by the wash of the valley.

Mineralization.—The mineralization may be said to be general throughout the formation just described, but varies in quantity and composition in each locality. In the granites, schists, dyke rocks and quartzites are found bunches, streaks and veins of the different forms of iron and copper, both oxidized and base, varying from a tiny crystal or speck to a huge mass a number of tons in weight enclosed in the adjacent rocks, which may or may not be part of or related to the body of ore.

Ore Deposits and Ores.—In a district as little developed as the Grand Encampment country it is evident that the precise ore conditions may not be fully understood until greater depths have been reached and some of each class of ores and ore deposits fully exploited. At present these are understood to consist of two classes, viz., ores found in the hard, unchanged formation, the diorites and unaltered schists, associated with a vein quartz, as at the Blakeslee and Verde properties, south of Battle, as distinguished from the ores found as a contact deposit between two different formations, as the Ferris-Haggarty, Doane-Rambler mines, and a fissure deposit, as the New Rambler, on Douglas Creek, in a gray granite. The former may be termed original ores and the latter secondary ores, or ores of replacement.

In the first case sulphide of copper is found in the outcrops, and with but little change beyond the surface oxidizing of the specimen and staining the adjacent rock with iron oxides and copper carbonates, often leaving the unchanged sulphides only covered by a thin film of oxides.

In the latter case the sulphides are encountered at "water level," viz., the level of permanent underground water, varying in depth in different localities and covered by a capping of iron oxides, known as the iron cap and the "gossan" of the Cornish miner.

In many instances the iron cap contains thin scales of native copper and shows stains of the green carbonate of copper or Malachite and some blue carbonate of copper or Azurite.

The principal ores are the yellow pyrites of copper or chalcopyrite and "peacock copper" or Bornite, as at the Ferris-Haggarty, and the Covelite ores of the New Rambler. Some phenomenally rich copper glance or chalcocite has been struck, mostly near the surface.

The works so far have shown that the ores immediately succeeding the oxidized ores underlying the iron cap are very rich, often running from 35 to 49 per cent copper in car load lots, as shipping returns have shown, but this is evidently a secondary enrichment, due to the leaching of the iron cap above, and gradually gives place to the lower and more permanent grade of ore that is reached as depth is gained.

It is evident that the permanent ores of this district, when opened up by deep workings, will prove to be a low grade Chalcopyrite ore, suitable for treatment by a concentrating, roasting and smelting process.

Gold and silver values throughout the district have uniformly been low, although some phenomenally rich gold values have been noted in the oxidized ores at Purgatory Gulch, the Charter Oak and some others, but with more attention being paid to this by-product, a higher grade may be anticipated in the future.

Grand Encampment.—This town is the practical center of the mining activity of this region, is pleasantly located, substantially built and has about 1,000 population at the present time. Here are located the principal supply houses, bank and headquarters of the principal companies operating in this district, and is the eastern terminus of the aerial gravity tramway from the Ferris-Haggarty mine to the Encampment reduction works, the location of the Encampment Power and Light Company's works and the other enterprises owned by the Penn-Wyoming Copper Company.

Aerial Tramway.—The tramway is sixteen miles in length, divided into four sections, with three auxiliary power stations.

one at the mine, one at Upper Cow Creek at the foot of Bridger Peak and one at Lower Cow Creek. These stations are equipped with power plants, storage bins, etc., to facilitate the operations of the line. Three hundred and four towers, with tension stations at intervals, are used to support the cables, which, moving at an average speed of four miles an hour, with buckets holding 700 pounds of ore each, are capable of delivering 984 tons of ore per day.

The Encampment Reduction Works.—These works are located at the tramway terminal, on the west bank of the Grand Encampment River, and are favorably situated as regards convenience in operating, handling ores, tailings and slag dumps, etc.

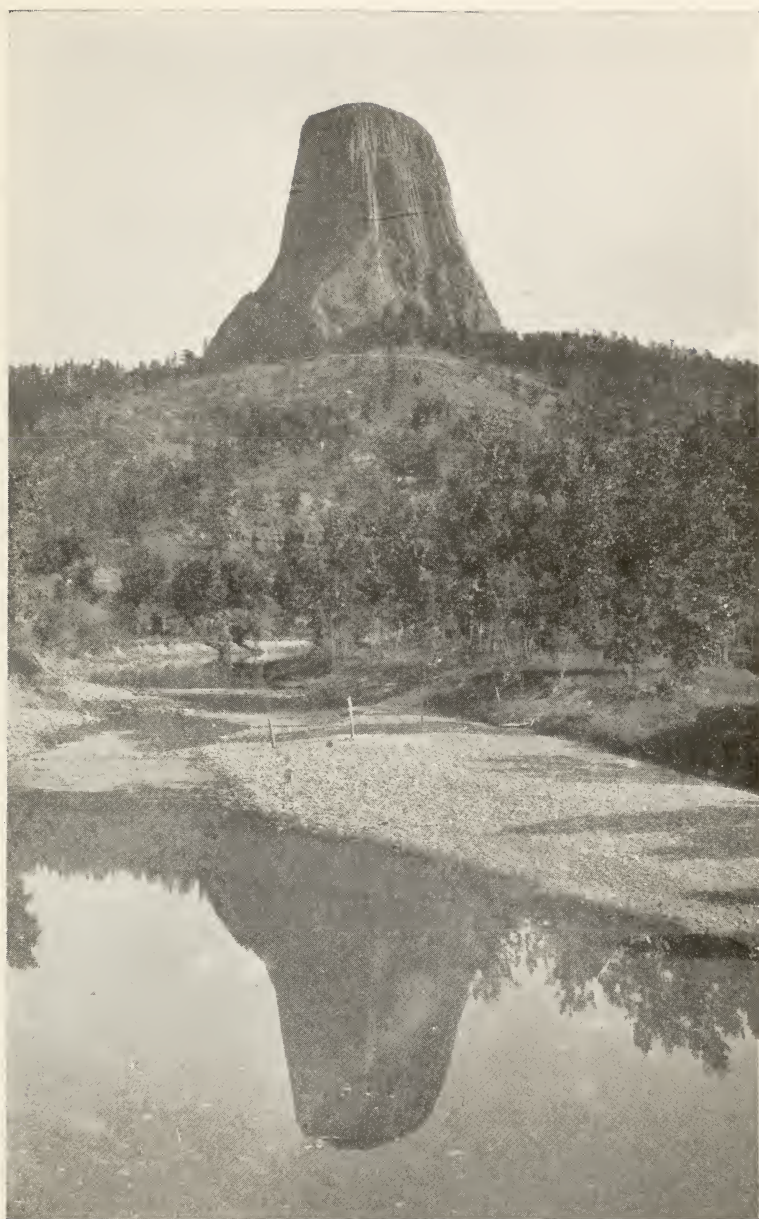
The ore from the receiving bins is delivered to the crushers and rolls, passes over rotary sizing screens, the coarse material passing over being elevated back to fine rolls, the finer passing through the screens, going on through the mill, and being sized and classified by sizers and jigs. The sized product passes over Wilfley concentrating tables for final treatment, and the concentrates, which run from 28 to 30 per cent copper, are sent to the briqueting plant, the tailings or waste being run into a tailing dam and settled. A mechanical straight line roaster has been installed to roast the high grade sulphides, with a capacity of forty tons per day.

The smelter consists of two matte furnaces smelting to a 50 per cent copper matte, which passes to the converter and is blown to blister copper. The entire plant is constructed on a 500-ton capacity basis, and all power used in the smelter, for cranes, etc., is electric, except the blowers and air compressor, which are driven direct from the water power.

During the winter just passed the Penn-Wyoming Company has been making extensive improvements in its works, installing new machinery and replacing some of the old. During the coming season other extensive improvements are projected, the principal one being a steam power plant, in order that the works may be operated the year around.

The production of copper for 1904 was very satisfactory, the copper being produced at a cost of 6.38 cents per pound, including the forty-four-mile wagon haul to the railroad. The greatest amount of copper produced in one day was 41,000 pounds, and in one month, that of October, 1904, 722,771 pounds, and a production of a car load of blister copper per day is expected to be maintained for 1905.

The Kurtz-Chatterton mine, west of Encampment, is the oldest in the district, and has a tunnel 1,700 feet long, with numerous drifts, shafts, etc. The ore is a low grade copper



THE DEVIL'S TOWER, CROOK COUNTY.



NATURE'S DOUBLE-HEADED SPHYNX.

sulphide in granite, suitable for concentration on an extensive scale.

In this vicinity are the Great Lakes, Norvell-Pickerell, Moon-Anchor, Chicago-Venture, Winona-Rex, Sweet and others, which have been working steadily.

Battle.—Towards Battle the Co-operative Company has been sinking on a vein of red iron oxides in schists and quartzite. This same condition is noted on the Hidden Treasure and Gertrude properties, and at intervals shows copper stains, both in the capping and quartz.

On what is known as the Portland mine, owned by the Battle Lake Copper Mining Company, work has been active. Open cuts and shafts have been opened along the vein, following it west and down the hill to Battle Creek, where a tunnel was started to follow the vein east into the mountain. At thirty-five feet from the portal the vein was encountered, which at this point shows gold and copper ore of workable grade and quantity. The tunnel has since been run a distance of over 200 feet. Open cuts and shafts have been sunk along the vein for a distance of about 2,000 feet and show ore of good grade.

The Cow Creek country along the tramway line is again active. The Lena Shields, Continental and Copper Age are steadily developing with good results. South of Battle, the Itmay, Verde and Three Forks work is making steady progress on promising showings.

Doane-Rambler Mine.—Work on this mine, which is the oldest operating mine, as well as one of the best known of the district, for this year has been entirely on development, only the ore taken out during this work having been mined and saved, to be shipped at convenient intervals, and no attempt made at regular shipments.

Great improvements have been made in the condition of the mine. Large new buildings have been erected and complete mechanical plant installed. The main tunnel has been completed, main shaft sunk from the 400 to the 600 level.

Drifts and cross-cuts on the 400, 500 and 600 levels have exposed ore conditions that fully warrant large works.

Ferris-Haggarty Mine.—This is the main producing property of the district, has produced over \$1,400,000 since it was opened up, and is the main source of ore supply for the Encampment smelter.

The vein is a contact deposit between schist and quartzite, showing a series of ore bodies varying in length up to 250 feet and in width from fifteen to forty feet. The ore is bornite and chalcopryite, and the grade varies from a 35 to 40 per cent

shipping ore to a 6 and 8 per cent concentrating ore, the latter predominating.

Originally the property was worked by shaft and hoist, but a working tunnel has been run in at the lowest practicable level (giving about 500 feet depth on the dip of the vein) and complete plant installed at the mouth of the tunnel. The ore is stoped out by machine drills, thrown into chutes, run to the tunnel level and hauled out by compressed air haulage, seven cars to a train, and run directly into the tramway ore bins and thence to the smelter sixteen miles away.

A hoist has been installed at the tunnel level and a winze sunk below this level, where drifts are being run on the ore and an active campaign opened for the production of ore during the coming season, which opens about May and closes December 15 following.

Dillon Vicinity.—Work around Dillon has been very active this year, the Anchoria, Jackpot, Independence, Pluto and Oshkosh-Wyoming Companies being especially prominent. The Congo property has developed steadily and makes a fine showing. The Bachelder has improved the plant and shaft, and is now doing permanent work. Work has also been active on the Octavia, Island City, Copper Bar, Home Run and a dozen others. The Echo property is especially interesting and promising, as a shaft is being sunk on a capping of iron oxides, identical with that of the Ferris-Haggarty, but lying with schist foot-wall and quartzite hanging-wall, where the Haggarty has a quartzite foot-wall and schist hanging-wall.

On Spring Creek the Copper Bar Company has erected a steam plant, and the Chippewa Mining Company has been doing work on a schist lead showing the usual oxidized surface condition, but with chalcopyrite carrying galena or lead sulphide at a very shallow depth and in considerable quantity. The Badger State Company has been sinking on a strong vein of quartz carrying copper and lead sulphides in mica schist.

The Syndicate property on Savery Creek is working on a contact between an altered schist and diorite dykes. Considerable copper ore of good grade has been taken out.

In Purgatory Gulch, situated six miles south of Encampment, in 1897, some remarkably rich gold specimens were found, and formed the basis of the excitement which has developed into the Grand Encampment Copper District.

The Fremont Copper Company is operating on Dunkard Creek and has installed a plant of machinery for sinking an inclined shaft on a promising showing.

The King-of-the-Camp, on the South Fork of the Grand Encampment River, is running a cross-cut tunnel to cut a

quartz lead in schist that carries promising values in gold, and is one of the few properties in this locality being worked for gold alone.

Beaver Creek is situated some twelve miles south of Encampment, and contains some promising prospects.

The Aetna, the Evening Star, Bay-Horse, Ruby, News-boy and Kearns-Consolidated are prominent properties, have steam plants erected and have done considerable work.

In the Gibraltar prospect, near Big Creek, eighteen miles from Encampment, a vein of iron oxides, stained with copper carbonates, was opened up and considerable good ore taken out.

The Cox mine, on Big Creek, has produced some remarkable high grade copper ore, and several shipments have been made from it.

The Charter Oak is one of the oldest properties in the district, and is located seven miles north of Encampment, in the northern edge of the foothills. Ores consist of sulphides in lower and oxidized in upper levels.

Elk Mountain.

This is the most northerly of the ranges comprising the Medicine Bow Range in Wyoming, and is a later uplift than the Sierra Madre, on the west side of the Platte. Here the sedimentary limestones of the Carboniferous period lie on the schists and granites of the earlier formations, and at the Elk Mountain M. & M. Company's property, on the north side of Pass Creek, the ore is found near the contact of these formations. This ore, in the upper workings, is copper glance, occurring in the bunches common to this ore, and in the lower workings is giving place to the chalcopryite, which is becoming more common as depth is reached.

The Cumberland Group, on the south end of Coad Mountain, shows a huge ledge of quartzose material, some twenty feet wide, lying conformably with the dip and trend of the schist and showing a good trace of ore.

The Camperdown Group, north of the Cumberland, has a remarkable showing of copper ore, similar to the Cumberland, both of which are regarded as good development propositions.

New Rambler Mine.

The Great Rambler mine is owned by the Rambler Mining and Smelting Company, is located on the crest of the Medicine Bow Range, in Albany County, and was first opened up as a gold prospect. In 1900 the first copper was struck at a depth of sixty-five feet, and the mine began immediately to

ship high grade copper ore. The formation containing the copper is a dioritic granite, with some micaceous schist in the vicinity, but the ore is found in a series of fissures in the granite. In common with the other prominent properties in Southern Wyoming, the surface and outcrops of the property show the usual oxidized forms of iron, with an occasional copper stain. The "iron hat," as this capping is called, extends to a varying depth and gives place to the various forms of copper minerals met with in this mine. The Rambler is a veritable museum of copper minerals, and nearly all the known forms have been found here either in quantity or as specimens. Native copper is noted in sheets often of a dendritic form and as small nuggets. Copper carbonates, green and blue, are abundant, as well as the silicates of copper. The red oxide of copper, Cuprite, and the black oxides, Tenorite and Malachonite, are noted in quantity. Covellite, or "indigo copper," is the ore that made this mine famous, as this variety has always been a rare form, and seldom, if ever, found in the quantity in which it occurs in this mine; the only small specimens of this variety are usually found in the different museums of minerals. Platinum has been found in the Rambler ores, occurring in the Covellite and showing 1.4 oz. of platinum per ton of ore. Palladium has also been noted in these ores in the Covellite ores with the platinum. The grade of ore at this property has been high, and a number of cars of very high grade ore have been shipped, especially that containing the glance and Covellite. These shipments show 1,928 dry tons of ore shipped, averaging 19 per cent copper and representing a gross value of \$77,622. The general grade of the oxidized ores is low, and to treat these ores a matte smelter of forty tons per day capacity has been installed. The matte made and shipped is given as follows: Six hundred and thirteen thousand pounds matte, 249,196 pounds copper, \$36,135.41 values. The grade of matte shipped varied from 30 to 60 per cent copper and the total amount of copper produced to date is 828,970 pounds.

West of the Rambler is the Blanche property, which has installed a mechanical plant, and the Blanche Mining Company is sinking a shaft for the Rambler ore shoots. The shaft is down 175 feet and a number of stringers of good ore cut, but the main ore has not yet been reached.

East of the Rambler the American Company has been sinking a development shaft on the Albany group of claims.

Near by is the Cuprite claim of the Medicine Bow Mines Company of Laramie, where a tunnel now in 825 feet is being run.

On Lake Creek are the Maudem and Ottumwa properties, where tunnels are being driven to cut leads exposed on surface.

On Iron Creek a huge ledge of iron oxides is noted outcropping in general as a hard, silicious hematite, but often associated with deposits of brown limonite and frequently carrying a small copper value. The shaft sunk by the Ak-Sar-Ben Company on this material to a depth of eighty feet is the deepest working and shows a soft condition beneath the capping.

The Strong Mine, northeast of Laramie, has developed steadily. A shaft house and hoist have been erected and the development work in the main shafts and drifts on the ore has shown up a remarkable body of concentrating ore.

Southeast of the Strong mine, near the old camp of Silver Crown, considerable progress and development have been made during the past year. The Louise mine, owned by the Hecla Company, has sunk an encline shaft on the ore and cross-cut at a depth of 160 feet to a similar body lying alongside the original ore, and a good grade of ore has been noticed in both of them.

The Globe Copper Company has reopened the old Fairview mine and has developed a considerable body of copper ore. These ores are both the characteristic chalcopyrite ores of this region, and the Globe Company is erecting a small concentrating plant to handle the ores now in sight. Extensive experiments have been made to determine the best method of treating these ores, and the successful operation of this plant will open a new field for Wyoming copper.

Sunlight Mining District.

Sunlight Basin, in Big Horn County, is attracting the attention of miners and prospectors, and considerable work is being done around Stinking Water Peak, one of the prominent peaks of the Absaroka Range. This region is located about sixty-five miles west and north of Cody, on the Burlington and Missouri River railroad, in the Yellowstone Park Timber Reserve, and about ten or fifteen miles east of the east line of the National Park.

The formations here are mostly andesites, rhyolites and porphyry. Diorite is also noted in some localities; basalt and conglomerates, both in massive sheets and dykes, are found.

Almost all the prospecting up to the present time has been in the vicinity of Stinking Water Peak, in an area of about six or seven miles square, covering the heads of Sulphur, Copper and Galena Creeks, and the North Fork of the Shoshone River.

The works of the Sunlight Mining Company, in Silver Tip Basin, are the principal works of the region, and consist of

three tunnels, 100 feet, 250 feet and 900 feet long, respectively, the latter being the main working tunnel, being run to cut an ore body that shows a surface width of about thirty feet of good grade ore. The ore from these works is a quartzose vein matter, carrying copper and iron sulphides, mostly chalcopyrite or yellow pyrites of copper, with a fair value in gold and silver. Some galena or lead sulphide is also found, which is often rich in silver. Shipments have been made from this property and showed a profitable return even in the face of a wagon haul of one hundred miles to the nearest railroad point at Red Lodge, Montana, after being packed for four miles down to the road from the mines. This region is favorably adapted for tunnel methods of mining, and thus prospecting may be carried on at all times and seasons, the winters being no more severe than in many of the mining regions of Colorado.

The new camp of Kirwin, lying seventy-five miles southwest of Cody, has made wonderful strides during the past year and the work is rapidly advancing at the present time. The Galena Ridge M. & M. Company, Shoshone Mountain Mining Company and others have been developing a large number of claims here for the past eight years, doing prospecting and improvement work where necessary, and have reached the point of permanent development. Mechanical plants are being installed and mills erected and the underground development work carried forward under favorable auspices.

The ores are copper and lead, carrying a higher silver and gold contents than is usual in this state, and the deeper works have shown that the values may confidently be expected to continue and improve with depth.

Further south, towards Washakie Needle and the Wind River Range, are a number of promising prospects and a vast territory to hear from. This, with the mountains of these chains in Uinta and Fremont Counties, is the most available new and undeveloped mining country in the west and is certain to be the scene of many rich discoveries within the next few years.

North of Laramie Peak, in Albany, Laramie and Converse Counties, work on a series of heavy iron caps is actively progressing. The formation here is schist and granite, and the principal showings are a series of huge oxidized iron caps lying in ledges of schists and gneiss and which show copper minerals in nearly every instance. These caps are usually immediately underlaid by pyrrhotite and white iron pyrites as depth is gained, and these minerals seem to be replaced by quartz and chalcopyrite or yellow pyrites of copper.

Prominent properties on these showings are the Maverick, Tenderfoot, Three Cripples and Maggie Murphy. The Three

Cripples has the deepest shaft and shows the characteristic condition above noted.

The Maggie Murphy Company is installing a machinery plant for deep work, and the present showings in the main shaft are very encouraging.

The Esterbrook, which is the oldest location in this district, is sinking a shaft on the vein of silicious lead carbonate and has reached a depth of 258 feet. The showings here indicate that this lead cap is underlaid by copper sulphides associated with galena or lead sulphides, and the company is now beginning to cross-cut and develop its showings at this depth.

West of the above properties are the Oriole and LaBonte, in LaBonte Canon. At LaBonte a tunnel has been run for a length of 550 feet, at which point the formation was cross-cut, showing a schist dyke highly mineralized with a width of 150 feet. A drift near the center of this dyke has shown a shoot of low grade copper ores, and other shoots are expected as this development proceeds.

At the Oriole mine development work has shown a low grade copper concentrating proposition, and a mill is expected to be installed during the coming summer.

The list of promising prospects might be indefinitely continued in every mountain range in the state, did space permit, but only the most prominent and best known localities are mentioned, and to name all would require a separate publication.

The total copper production of Wyoming from the earliest record to December 31, 1904, is as follows, the prices given being the average price of copper for the year:

Year.	Number of Pounds.	Price per Pound.	Value.
1882.....	75,000	17.100 cents	\$ 12,757.50
1883.....	962,468	13.700 cents	131,858.11
1888.....	232,819	15.900 cents	36,017.32
1889.....	100,000	12.000 cents	12,000.00
1895.....	6,872	10.110 cents	694.07
1897.....	127,471	11.100 cents	14,149.28
1898.....	233,044	12.000 cents	27,965.28
1899.....	3,104,827	17.100 cents	530,925.39
1900.....	4,206,776	16.250 cents	683,601.50
1901.....	914,412	16.110 cents	140,909.82
1902.....	75,297	11.620 cents	8,749.51
1903.....	947,106	13.420 cents	127,101.62
1904.....	4,220,000	12.831 cents	541,046.20
Totals.....	15,206,092		\$2,267,775.60

Oil, THE LIGHT OF AGES.

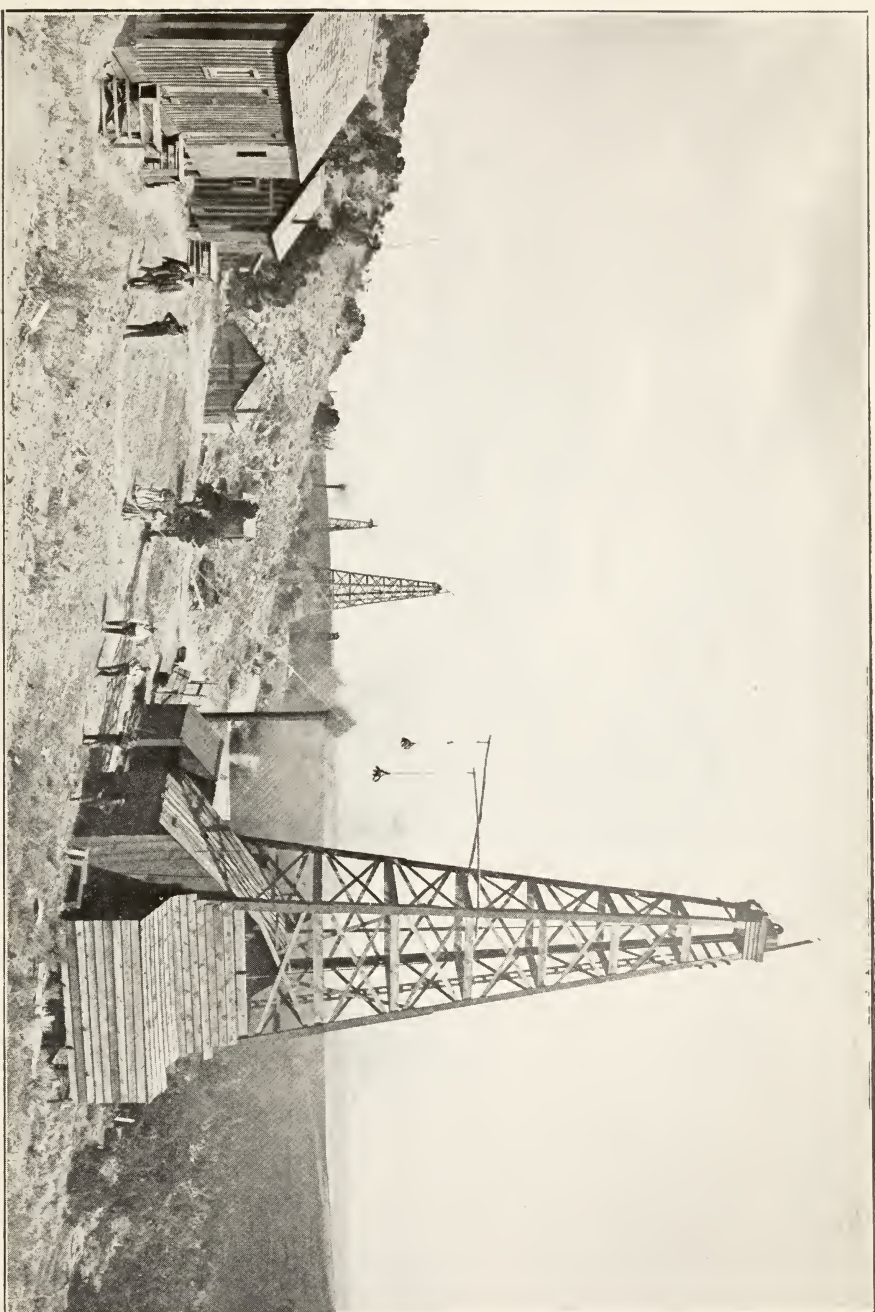
When it comes to oil, Wyoming certainly bids fair to illuminate and lubricate the works of man for generations. The eighteen oil fields known in this state present a greater variety of product than any similar known area, as it varies from the highest grade of lubricating oils without a trace of illuminating constituents to an equally high grade of illuminating oil totally free from lubricants, and with a range of intermediate oils and products that is a revelation to oil men.

In each of the eighteen oil fields oil is flowing from springs, or there are thick bands of oil sand exposed. The greater number of these fields are situated in the central part of the state, but there are fields in the northeastern part, in the southwestern portion, and in the northern central region. The oils that have been analyzed vary in nature from high grade lubricating to oils that will produce from 40 to 50 per cent of kerosene.

With proper facilities for transportation, the oil industry in Wyoming will equal, if not surpass, that of any state.

The greatest development is found in Natrona County, where a lubricating oil is found which has been pronounced by experts to be the best in the world; and in Fremont County, where there are thirteen flowing wells, now capped for the want of a railroad. At Casper there is a refinery having a capacity of 200 barrels of crude oil per day. The product is hauled from the wells in wagons that have a carrying capacity of 18,000 pounds, each train of wagons requiring twelve to sixteen mules. This greatly adds to the expense of production. At present the following oils are manufactured at Casper: Railroad engine, railroad car, railroad valve and railroad signal. These oils are the most perfect lubricants, of high endurance, highest fire tests, and greatest body and wearing power. Besides railroad oils, the refinery manufactures other special high grade oils, viz.: Stationary engine, valve, spindle oils, dynamo oils, watch oils, neutral oils for blending animal and vegetable oils, paint oil, visco axle grease, and heavy machine oil for mowing machines. The product of eight producing wells varies in value from twenty cents to one dollar and fifty cents per gallon.

The Bonanza field, in Big Horn County, is attracting a great deal of attention; five wells recently drilled struck oil at 280 feet.



IN THE OIL FIELDS OF UINTA COUNTY.



ON THE GOVERNMENT ROAD BETWEEN CODY AND YELLOWSTONE PARK.

Geology.—Full information on this subject may be obtained by addressing a request to Miss Grace Raymond Hebard, Secretary of the Board of Trustees of the University of Wyoming, at Laramie, Wyoming, for oil bulletins. The University issues bulletins on the mining resources of Wyoming, prepared by the Professor of Geology from personal field investigation.

The Popo Agie Oil Field.—This field is situated ten miles southeast of Lander, Fremont County. It covers several townships and extends north to Lander. The history of this field is far more interesting than any other oil field. It was discovered by Bonneville in 1833, and is the place where the first producing oil well was drilled. From the date of Bonneville's visit up to 1867 the oil spring was unknown, except to the hunter or trapper, who frequented the locality to secure the oil for medicinal, lubricating, illuminating and other purposes. There are now thirteen flowing wells, with a capacity each of 200 barrels per twenty-four hours; owned by the Belgo-American Drilling Trust, as are also the lubricating oil wells situated on Salt Creek, with the refinery at Casper. The oil appears black, is reddish brown by transmitted light and has a strong, disagreeable odor.

Flashing point	90° F.
Burning point	136° F.
Specific gravity . . . . .	.900
Heating power	11,437 calories per gramme

In refining the products are gasoline and kerosene, about 35-45 per cent, and the balance lubricating oils and asphaltum. The oil is of heavy asphaltum base and suitable for high grade fuel, tests giving 14,571,000 foot pounds of energy per pound of oil. One pound of this oil will convert 19.40 pounds of water at 212 F. degrees into steam.

Analysis shows the following products:

Naphtha (gasoline)	2-5 per cent
Kerosene, .810-.830	30-40 per cent
Lubricating oil, .910-.940	35-50 per cent
Paraffin	3-5 per cent
Coke	7-10 per cent
Gas	10-12 per cent

Lander and Shoshone Oil Fields.—The Lander field joins the Popo Agie on the north, and the Shoshone joins the Lander on the north, extending into the Wind River Indian Reservation.

Distillation of Lander Petroleum.

500 cubic centimeters of oil taken. Each fraction is 5 per cent.

No. of fraction	Boiling Point Centigrade	Specific Gravity	Degree Baume	Flashing Point		Burning Point		Cold Test	
				°C.	°F.	°C.	°F.	°C.	°F.
1	155-215	.8100	42.8	51	124	62	144		
2	215-235	.8218	40.4	64	148	77	171		
3	235-250	.8313	38.4	82	180	93	200		
4	252-265	.8400	36.7	94	202	109	229		
5	265-280	.8452	35.6	107	225	122	252		
6	280-285	.8500	34.6	117	243	135	275		
7	285-290	.8510	34.4	120	248	137	279		
8	290-295	.8565	33.4	124	256	142	288		
9	295-310	.8640	31.0	137	279	157	315		
10	310-325	.8680	31.3	147	297	160	337		
11	325-340	.8740	30.2	152	306	178	353		
12	340-345	.8725	30.5	147	297	167	353		
13	345-355	.8745	30.1	151	304	167	353	-9	16
14	355-365	.8830	28.7	137	279	184	364	-2	28
15	365-375	.8835	28.5	142	288	177	351	1	34
16	375	.8705	30.8	109	226	132	270	5	41
17	380	.8505	34.5	57	135	84	184	0	32
18	385	.8800	29.1	57	135	84	184	9	48

Distillation of Shoshone Petroleum.

500 cubic centimeters of oil distilled. Each fraction is 5 per cent.

No. of fraction	Boiling Point Centigrade	Specific Gravity	Degree Baume	Flashing Point		Burning Point		Cold Test	
				°C.	°F.	°C.	°F.	°C.	°F.
1	165-265	.8590	32.0	27	81	67	153		
2	265-295	.8840	28.4	72	162	137	279		
3	295-305	.8888	27.5	72	162	122	252		
4	305-325	.9065	24.4	82	180	139	283		
5	325-335	.9125	23.4	92	198	147	297		
6	335	.9235	21.6	107	225	167	333	-10	14
7	335	.9175	22.6	97	207	155	311	-7	19
8	325	.8800	29.1	42	108	64	148	-10	14
9	315	.8995	25.6	37	99	62	144	-11	30
10	305	.8955	26.3	40	104	67	153	4	39
11	255	.8790	29.3	37	99	57	135	-10	14

The Salt Creek Oil Basin is situated fifty miles north of Casper, Natrona County. This oil is the finest lubricating oil in the world. It is hauled in wagons a distance of fifty miles, to Casper, to be refined.

Analysis of Oil from Salt Creek Basin, Natrona County.

Crude oil—red by transmitted and olive green by reflected light; specific gravity, .9050 (25.2°B.)

No. of Distillate	Boiling Point		Specific Gravity	Degree Baume	Remarks
	°C.	°F.			
1	120-210	248-410	.8600	32.6	Flashes at 50°C. (121°F.)
2	210-265	410-510	.8710	32.4	Flashes at 98°C. (210°F.)
3	265-275	510-528	.8770	30.3	
4	275-280	528-536	.8730	30.4	
5	280-285	536-544	.8622	33.3	
6	285-290	544-554	.8393	38.0	
7	290-320	554-608	.8518	35.4	
8	320-340	608-612	.8610	33.4	
9			.8883	28.4	
10					Coke

Color of above: Nos. 1 to 9, from dull straw color by regular gradations to the color of the crude oil; No. 10, black.

Uinta County Oil Fields.—This district includes several fields—Bear River Basin, Round Mountain, Fossil, Spring Valley, Twin Creek, Carter and Hilliard—and has many natural advantages over the other districts on account of its proximity to transportation, the Union Pacific railroad, and the points of distribution, Salt Lake and Ogden.

The following analysis is a fair representation of the oil from several fields in this district:

Distillation of Uinta County Petroleum.

	By Heating and Changing Temperature		The Percentage Distilled off		Specific Gravity of Product	Hydrometer Gravity	Nature of Product
	From	To	By Vol.	By Wt.			
A . . .	66°F.	302°F.	15	17.1	0.740	60	Gasoline and benzine
B . . .	302	491	33.1	33.4	0.802	46	Illuminating
C . . .	491	662	26.5	27.1	0.830	35	Heavy illuminating, as Signal or Headlight
D . . .	662	Boiled dry	19.5	20.4	0.840	31	Lubricating Oil and Paraffin
Residue	Bituminous, soluble		?	1			
"	Carbon & ash, insol.		?	1			

Per cent.

Naphtha, 60° F. (gasoline and benzine) 27.0
 Water white kerosene, 45° Baumé, 145° flash, 172° fire test. 25.5
 Signal and headlight, 45° Baumé, 300° fire test. 7.0
 Lubricating reduced stock, 23.5° Baumé. 40.5

100

The cold test of the crude oil is 58° F., and the amount of crystallized paraffin that was present in the lubricating stock is 18.5 per cent.

The Newcastle Oil Field is located in the vicinity of Newcastle, county seat of Weston County, on the Burlington railroad.

This petroleum is similar in composition to the Salt Creek oils and belongs to the class of heavy oils, and is not suitable for the production of gasoline or kerosene, although they can be obtained from it. Its chief value will be for lubricating and for fuel purposes. It is, in its natural state, an excellent lubricant, has a high gravity and low cold test, a high viscosity and shows no paraffin or asphalt. This oil is also well fitted for the manufacture of gas.

The Newcastle petroleum as represented by the samples taken from the pit of Eagle Spring has a specific gravity of .9168 (22.8° Baumé). It flashes at 122° C. (251.6° F.) and

takes fire at 153° C. (307.4° F.). The odor is not disagreeable, and for many purposes it could be sold as a lubricating oil in a crude state. No paraffin crystallizes out on cooling and little or no asphalt is left on distilling. The viscosity at 60° F. is 29.43, using Engler's viscosimeter and compared with the viscosity of water.

Distillation of Newcastle Petroleum from the Pit.

1500 cc. in copper flask. Collected in 5 per cent fractions.

Fraction No.	Specific Gravity	Degree Baume	Flashing Point		Burning Point		Remarks
			° C.	° F.	° C.	° F.	
1. . . . .	.868	31.2	80	176	97	207	Light yellow
2. . . . .	.874	30.2	89	192	117	242	" " slight green fluorescence
3. . . . .	.881	29.2	97	206	127	260	" " " " "
4. . . . .	.888	27.8	108	226	137	278	" " " " "
5. . . . .	.892	26.9	100	212	144	291	" " " " "
6. . . . .	.897	26.0	91	196	145	293	" " green fluorescence
7. . . . .	.897	26.0	70	158	142	288	" " " " "
8. . . . .	.897	26.0	47	117	135	275	" " " " "
9. . . . .	.900	25.2	60	140	146	295	Reddish yellow, green fluorescence
10. . . . .	.903	25.0	65	149	153	307	" " " " "
11. . . . .	.903	25.0	73	163	159	318	Red, strong fluorescence
12. . . . .	.903	25.0	77	170	154	309	Dark red, strong fluorescence
13. . . . .	.900	25.2	83	181	168	334	" " " " "
14. . . . .	.874	30.1	35	95	89	192	" " " " "
15. . . . .	.869	31.0	37	99	64	147	" " " " "
16. . . . .	.897	26.0	39	102	101	214	" " " " "
17. . . . .	.900	25.2	51	124	104	219	" " " " "
18. . . . .	.890	27.5	50	122	99	210	" " " " "
19. . . . .	.908	24.8	35	95	87	188	" " " " "

The Bonanza Oil Field and the Cottonwood Oil Field are in close proximity to each other in Big Horn County, near the No Wood River, a tributary of the Big Horn. Active development work is now being carried on in this district, a very fine grade of oil having been found.

Analysis of Bonanza Oil.—Specific gravity, .8446 (36° Baumé). Color: Red; strong green fluorescence. Odor: Like kerosene. Flashing point: 13° C. (55° F.). Burning point: 35° C. (95° F.).

Distillation into 10 per cent fractions:

Fraction.	Boiling Point.	Color.
No. 1.	80° C.—142° C.	Water white.
No. 2.	142° C.—177° C.	Water white.
No. 3.	177° C.—209° C.	Water white.
No. 4.	209° C.—240° C.	Straw.
No. 5.	240° C.—265° C.	Darker yellow.
No. 6.	265° C.—303° C.	Darker yellow, slight fluorescence.
No. 7.	303° C.—350° C.	Reddish yellow, stronger fluorescence.
No. 8.	350° C.—380° C.	Reddish yellow, stronger fluorescence.
No. 9.	380° C.—400° C.	Red, bluish fluorescence.
No. 10.	400° C.	Seven per cent collected.

This petroleum will work up into the following products:

Gasoline	20 to 25 per cent
Kerosene	55 to 60 per cent
Light lubricating oil.	5 to 10 per cent
Paraffin	2 to 4 per cent
Coke and loss.	4 to 6 per cent

The Douglas Oil Field is situated a short distance south of Douglas, county seat of Converse County, elevation 5,000 feet. The quality of the crude oil in this section is exceptional and will work up into remarkable lubricating oils.

Distillation of Douglas Petroleum.

Amount used, 500 cc., in grammes, 480.5 gr.; Specific Gravity, .9610; Degree Baume, 16; Flashing Point, 164 °C. (327 °F.); Burning Point, 195 °C. (383 °F.)

	Boiling Point		Specific Gravity	Degree Baume	Flashing Point		Burning Point		Amount Grammes
	°C.	°F.			°C.	°F.	°C.	°F.	
A	170-279	338-534	.8805	29	50	122	95	203	25.00
B	279-308	534-586	.8880	27.6					22.01
C	308-310	586-590	.8810	28.9	30	86	86	186	22.20
D	310-312	590-593	.8852	28.1					22.03
E	312-317	593-602	.8634	32.1	Below 15	59	28	82	22.13
F	317-324	602-615	.8757	29.9					21.58
G	324-345	615-653	.9100	23.8	27	80	96	204	21.89
H	345-350	653-662	.9128	23.4					22.75
I	350-341	662-645	.9073	24.3	Below 15	59	54	129	22.82
J	341-338	645-640	.9022	25.2					22.69
K	338-348	640-658	.9090	24	Below 15	59	58	136	22.55
L	348-340	658-644	.9110	23.7					22.73
M	340-334	644-633	.9063	24.5	Below 15	59	47	116	22.78
N	334-321	633-609	.9000	25.5					22.66
O	321-309	609-588	.9122	23.5	Below 15	59	20	68	22.50
P	309-	588-	.9200	22.1					22.80
Q									7.36

The Oil Mountain Field is situated twenty-five miles west of Casper, Natrona County. This petroleum is principally valuable for lubricating purposes, although the most of it could be worked up into kerosene for open lamps, such as miners use.

Distillation in a Vacuum of Petroleum from Oil Mountain.

10 per cent fractions, 35 millimeters pressure.

No.	Boiling Point		Specific Gravity	Degree Baume	Flashing Point		Burning Point	
	°C.	°F.			°C.	°F.	°C.	°F.
1	180-211	356-412	.873	30.4	112	234	196	385
2	211-242	412-468	.881	29.0	137	279	201	394
3	242-269	468-516	.893	26.8	155	311	223	433
4	269-276	516-527	.899	26.0	160	320	237	459
5	276-310	527-590	.906	25.5	193	379	250	482
6	310-320	590-608	.909	24.0	200	392	287	549
7	320-335	608-635	.910	23.0	167	333	255	491
8	335-340	635-644	.898	26.0	98	208	203	397
9	340-340	644-644	.894	26.8	80	176	179	354
10 . . . . .			.897	26.0				

The Dutton Oil Field is situated partly in Fremont County and partly in Natrona County. Many oil springs are found here and natural gas is quite abundant. There is practically

no development in this district. The oil has a gravity of .927 (21° B.).

The Belle Fourche Oil Field is situated about fifteen miles north of Moorcroft, on the Burlington railroad, in Crook County. In the early history of the discovery of gold in the Black Hills, needing lubricating oil for the machinery, men were employed in this field in collecting oil from the springs, which was transported by wagon to Deadwood and there sold for \$28 per barrel.

Belle Fourche Petroleum.

No.	Per Cent	Boiling Point		Specific Gravity	Degree Baume	Flashing Point		Burning Point	
		°C.	°F.			°C.	°F.	°C.	°F.
1.	2.74	Below 200	Below 392	.775	50.0	..	..	..	..
2.	2.30	200-230	392-446	.828	39.1	37	99	50	122
3.	2.01	230-240	440-464	.846	35.4	55	131	69	156
4.	2.74	240-250	464-482	.852	34.3	67	153	77	171
5.	2.13	250-260	482-500	.857	33.3	74	165	85	185
6.	3.07	260-270	500-518	.863	32.2	84	183	104	219
7.	3.28	270-280	518-536	.869	31.1	92	198	110	230
8.	4.11	280-290	536-554	.874	30.2	100	212	119	246
9.	4.27	290-300	554-572	.879	29.3	110	230	124	255
10.	4.66	300-310	572-590	.883	28.6	115	239	130	266
11.	4.27	310-320	590-608	.889	27.5	118	244	138	280
12.	5.09	320-330	608-626	.892	27.0	126	259	145	293
13.	4.32	330-340	626-644	.894	26.6	120	248	145	293
14.	4.77	340-350	644-662	.898	25.9	117	243	155	311
15.	6.29	350-360	662-680	.899	25.7	110	230	167	333
16.	9.53	360-370	680-698	.899	25.7	96	205	167	333
17.	6.74	370-380	698-716	.901	25.4	75	167	255	311
18.	10.79	380-390	716-734	.907	24.4	55	131	135	274
19.	14.98	390-400	734-752	.910	23.8	42	108	125	257
20.	1.91	Residue.	..	..	..	..	..	..	..

The Powder River Oil Field is located on the South Fork of Powder River, sixty miles northwest of Casper, county seat of Natrona County; fifty miles south of Buffalo, county seat of Johnson County. There are many oil springs in this field. This is one of the best fields in Wyoming; the structural features are ideal. This petroleum is heavy and black; the odor is slight, resembling common kerosene, and in general character is similar to Salt Creek oil and the Popo Agie oil.

Distillation in a Vacuum of Petroleum from Oil Canon, Powder River Field.
10 per cent fractions, 35 millimeters pressure.

No.	Boiling Point		Specific Gravity	Degree Baume	Flashing Point		Burning Point	
	°C.	°F.			°C.	°F.	°C.	°F.
1.	130-180	266-356	.842	36.1	57	135	71	160
2.	180-200	356-392	.860	32.4	72	162	95	203
3.	200-220	392-428	.870	30.8	77	171	92	198
4.	220-246	428-475	.888	27.5	74	165	110	230
5.	246-248	475-478	.902	25.2	176	349	205	401
6.	248-308	478-586	.902	25.2	190	373	228	442
7.	308-334	586-633	.957	16.9	184	363	249	480
8.	334-320	633-608	.957	16.9	67	153	118	244
9.	320-364	608-687	.882	28.6	55	131	83	181
10.	..	..	.900	25.4	47	117	93	199

The Rattlesnake and Arago Oil Fields are on the north-east slope of the Rattlesnake Mountains in Natrona County. Here is found asphaltum in sufficient quantities for commercial importance, if it were not for the lack of transportation.

Development.—The successful and profitable development of many of the oil fields depends largely upon the construction of new railway lines—an investment fully warranted by this resource—but there are a great many opportunities presented in many of the fields which are adjacent to present railway lines for profitable and highly remunerative development.

Wyoming Manufactures.

For thirty years Wyoming, with its 97,000 square miles of mountains and plains, suitable for the grazing of innumerable flocks and herds, has been looked upon as a purely stock-raising and mining region, but a change is coming over the spirit of her dreams. The gigantic irrigation projects now under full headway have attracted wide attention to our agricultural possibilities. Under the reclamation act, passed by Congress three years ago, the United States Government is about to reclaim several hundred thousand acres of Wyoming soil. This, in connection with numerous individual projects, has served to call attention to the fact that Wyoming has some eight million or ten million acres of land susceptible of irrigation and which can be made as productive as any soil in the world. Therefore, it is evident that this state will in the near future be transformed from a purely pastoral region into one of the foremost agricultural commonwealths in the west. As agriculture is the basis of all wealth, it naturally follows that varied and innumerable resources heretofore almost unthought of will spring into life. Even now some of the great railroad systems of the country are contemplating extensive construction within our borders, and doubtless the next three years will witness more railroad building in Wyoming than in any other state in the Union. Heretofore one of our greatest drawbacks has been the lack of railroad facilities, but, unless all signs fail, we will not have this to contend with for very long.

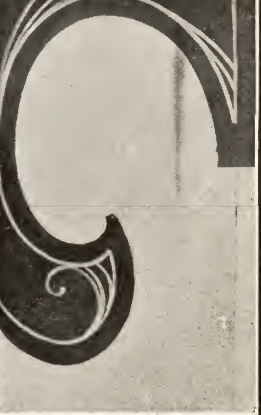
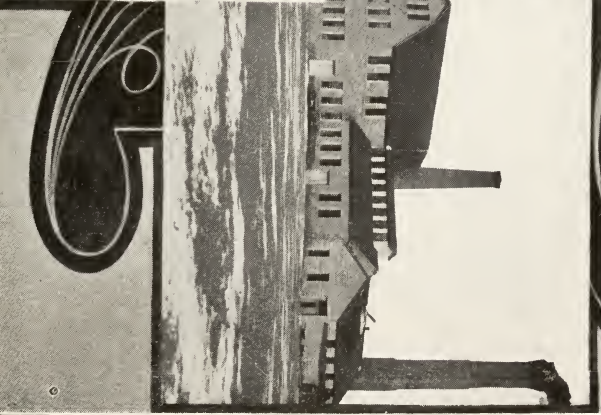
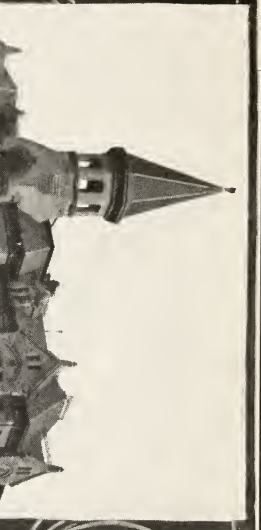
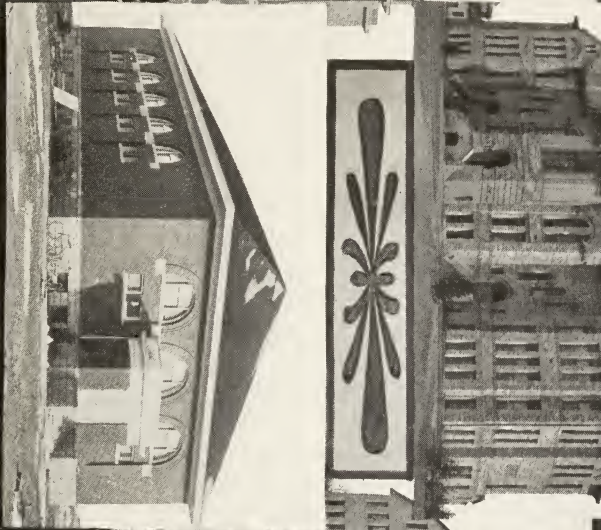
Increase in population will bring manufacturing establishments. There are grand opportunities. Wyoming possesses four elements that would make a great manufacturing state, had she nothing more—iron, coal, copper and oil. And these elements exist here in almost unlimited quantities. The Colo-

rado Fuel and Iron Company sends to Guernsey, Wyo., for the iron with which to make its finest steel. That iron should be manufactured into the finished product in this state. Immense steel plants could be successfully operated within our borders. The coal, the iron and the limestone should be brought together and the magic wands of capital and labor will doubtless do it in the near future. Transportation costs too much money for capitalists to forever ship our rich raw materials to factories beyond our borders.

At the present time we have 450 manufacturing establishments in Wyoming, representing an investment of over \$3,000,000. All these establishments are doing well, but there is a wide field and great demand for more institutions of this character. Iron and steel plants could be established in the immediate vicinity of our great iron mines at Guernsey, Hartville and Sunrise, saving the expense of long haulage and utilizing the cheap water power, which may be obtained from the immense dams soon to be constructed on the Platte River by the government and obtaining either coal or coke from near by coal fields, and with the advantage of railroad facilities east and west, they could certainly be operated more cheaply than like establishments situated hundreds of miles away from the mines and necessarily paying enormous freight charges for the transportation of the raw material.

The wonderful onyx which is found in unlimited quantities in Northern Laramie County is transported at great cost in a crude state to be manufactured in distant localities, the waste, of course, being enormous. Polishing and manufacturing plants could be located right at the mines and the finished product shipped direct to market. In several localities, particularly near Laramie, Wyo., cement and plaster of paris plants are now in operation, but more could be worked with great profit and the output tremendously increased. In the southern and eastern sections of the state are immense quantities of mineral paint only requiring the investment of small capital to be manufactured into a paying product. The exhibit of various kinds of building stones and marble at St. Louis attracted wide attention to the possibility of manufacturing these products as successfully in Wyoming as in Vermont.

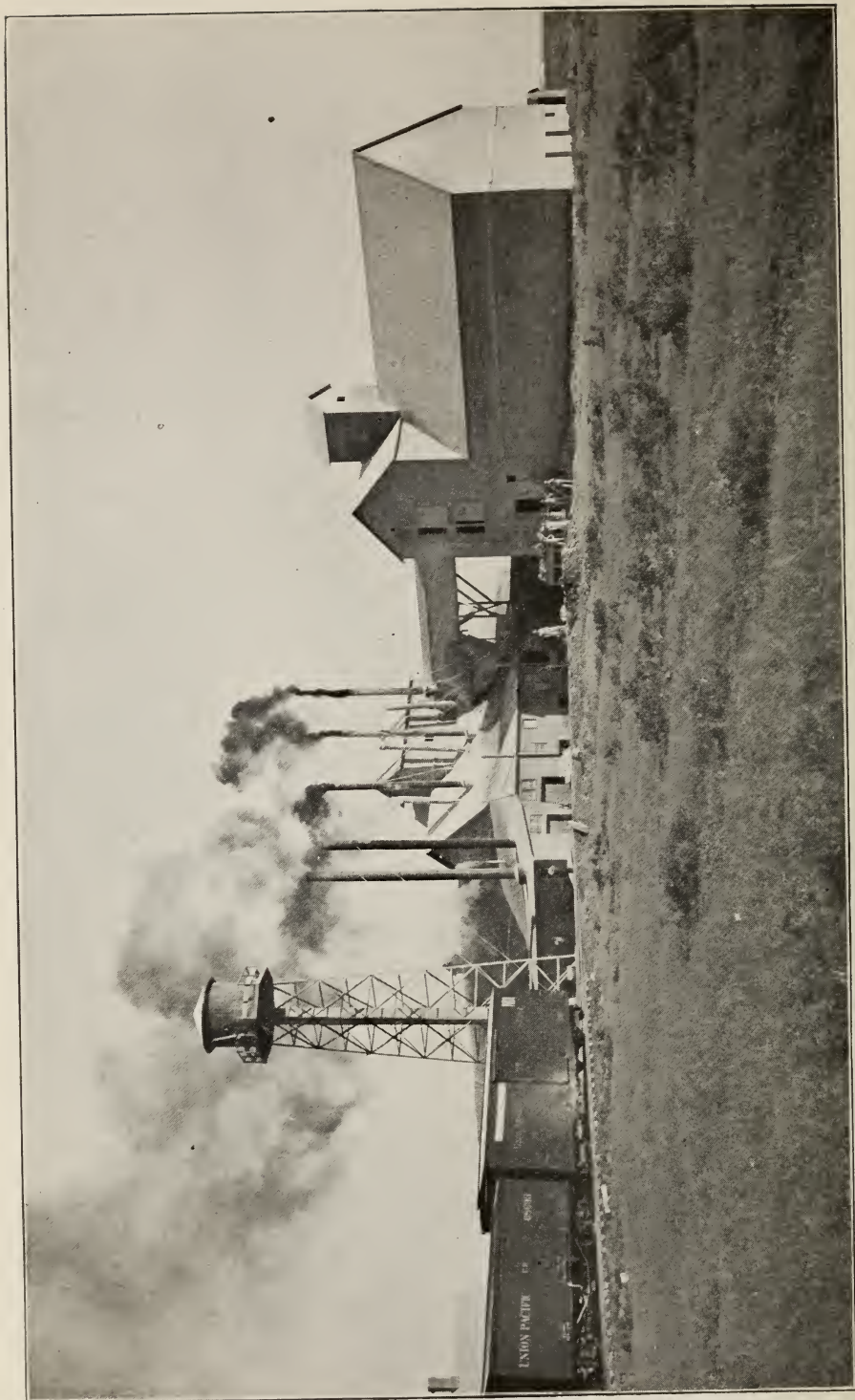
In five widely separated fields oil has been discovered in practically unlimited quantities, and over two hundred varieties of illuminating and lubricating oils have been manufactured from the natural product. Many bi-products of great value are also secured from this natural oil. At Casper, Wyo., a small refinery has been in successful operation for many years.



Science Hall

Main Building
Gymnasium

Mechanical Hall



THE LARAMIE PLASTER WORKS.

Dairy products are also receiving considerable attention, and in Star Valley, in Uinta County, two large creameries have been established, which ship large quantities of butter and cheese as far west as Washington and Oregon, and north to the Butte and Anaconda mines, in Montana.

The development of agriculture will call for the establishment of many manufactories in connection therewith, such as canning factories of all kinds and sugar beet plants. Speaking of the latter, it is noted in one of the reports of the Secretary of Agriculture that beets which have been grown upon irrigated lands in Wyoming are uniformly of high character and rich in sugar. It is evident that there is perhaps no crop which can be so successfully cultivated upon irrigated lands as sugar beets. For then we have almost perfect climatic conditions. During the growing seasons almost unbroken sunshine prevails, a condition essentially favorable to the production and storage of large crops of sugar beets. Then in this high altitude summer is not too warm for the proper growth of the beets, and the control of the water for irrigation purposes renders it possible to stimulate the growth of beets during the earlier periods of the summer, while the withdrawal of the water prevents any second growth after the beets have matured.

Actual experiments have given the following percentages of sugar in beets grown in different localities in the state: 15.25 per cent at Lander, 15.85 at Saratoga, 17.85 at Wheatland and 18.36 at Sheridan, and as high as twenty-four tons to the acre have been produced.

Some 8,000,000 acres of land in Wyoming are covered with splendid pine timber, and the lumber industry is susceptible of great development.

Wyoming is particularly fortunate in having immense opportunities for water power plants, the power from which by means of electricity can be carried to any point where it may be desired to establish a manufacturing plant. Her inexhaustible supply of coal and coke is also worthy of consideration in this connection. Her laws are very favorable and many of her cities offer special inducements for manufactures.

Bear in mind that Wyoming is rapidly changing from a great pastoral region of flocks and herds to an agricultural commonwealth, and that this change will vastly increase the demand for manufactured products. Remember that heretofore we have been handicapped by lack of transportation facilities, but that now we are about to witness more railroad building in Wyoming during the next five years than in any other state. Our products will then have free access to the great market east, west, north and south. Also remember our inexhaustible

coal measurers, our unclaimed water power, our unlimited natural resources of oil, iron, soda, wool, marble, building stone, fruits and vegetables, and then picture, if you can, the limit of successful manufactures. Here in this high altitude, under cloudless skies and upon rich irrigated land, the sugar beet reaches perfection both in quality and quantity. Sugar can be manufactured cheaply and successfully. Here the wool can be manufactured into cloth and the cloth shipped to market, instead of paying freight through to Boston annually on thousands of tons of Wyoming sand. Here we can grow the finest fruits and vegetables, and canning factories can supply this whole interior region. Here our natural oil can be transformed into 150 varieties of the finest lubricating and illuminating oils on the market, together with numberless bi-products. Here steel can be manufactured by the side of the iron mine, and one pound of watch springs will have greater value than a car load of the high grade Bessemer steel ores shipped today by the train load from Guernsey to Pueblo, Colo., for manufacture. Here great beds of natural soda (the most important of all the articles of chemical manufacture) can be reduced into numerous chemical products, including even glass. And so one might go on enumerating the many opportunities for progress in this particular line of occupation.

Educational Advantages.

The State of Wyoming is notable for the educational advantages it gives the children of its citizens. In educational matters it leads many of the older states, in that it employs a larger number of teachers in proportion to its population; that its school year is longer; that the salaries paid its teachers, especially those paid women teachers, are higher, and that its school methods are at all times kept in unison and harmony with the latest and best in modern education.

The amount of funds raised in Wyoming for school purposes by voluntary taxation is liberal, and expenditures in educational matters are not stinted. The district school board provides free text-books for all pupils. The latest and most approved text-books have been purchased and supplied to every school district in the state. The result of this liberality and of the careful attention given the schools of the state by its citizens and school officers has been to keep the percentage of illiteracy in Wyoming below that of any state or territory. A

practical illustration of this was shown at the muster of troops in the state for service in the Spanish war. Of 1,000 young men who enlisted in Wyoming, not one was unable to sign his name to the muster rolls, and every man had received a fair education.

The last school census showed that there were 22,391 school children in the state. These are in attendance at 615 schools. Sparsely settled communities in Wyoming enjoy equal school facilities with more thickly settled regions. It is the universal custom in the state to establish a school if five pupils can attend. A compulsory school law is on the statute books, but it has never been found necessary to enforce it, as school attendance is voluntary.

The number of teachers employed in the state is about 700. The salaries paid teachers in Wyoming average \$70.78 per month for male teachers and \$46.39 for female, which, when it is considered that the country schools of the state form the great majority of the entire number, compare most favorably with salaries paid in other states.

The 400 school buildings of the state are well built and comfortable. The cost of construction has been \$503,390.43, while repairs and improvements amounting to ten thousand dollars are made annually. As the sparsely settled communities of the state grow, the primitive log building which at first constitutes the school house gives place to the neat frame or brick structure with all the modern apparatus for successful educational work.

The State Superintendent has prepared a uniform course of instruction for the graded and ungraded schools of the entire state. This has served to systematize the work of teachers and County Superintendents, and has added materially to the effectiveness of the service.

One of the most valuable aids to the support and maintenance of the public school system in Wyoming is the fund received annually from the rental of school lands. During the year ending March 31st, 1905, the sum of \$80,747.27 was received from this source and distributed to the school officers of each county in proportion to the number of pupils in each. School libraries in the different counties contain 20,000 volumes. The total acreage of school land in the state which may be utilized for this purpose is 3,600,000 acres. It may reasonably be expected that sufficient income will be received from the rental of school lands within the near future to increase the efficiency of the schools of the state to the highest degree, and this without imposing additional burdens upon the taxpayer.

The University of Wyoming.

The University of Wyoming is a part of the free public educational system of the state. The governing body of the institution is a Board of Trustees appointed by the Governor for a term of six years, as provided in the constitution of the state. In accordance with the law of the state, the University aims to complete and crown the work that is begun in the public schools by furnishing the ample facilities for liberal education in literature, science and art; and for professional studies in mining, mechanical and irrigation engineering, agriculture and commerce.

The College of Liberal Arts (including the Graduate School) offers a four years' course in the study of literature, art and science, and affords opportunity to those who wish to carry their studies beyond the limit of the regular course.

For the benefit of those who wish to be trained for some special profession, four schools are provided, viz., the Normal School, the School of Mines, the College of Agriculture and the College of Mechanical Engineering. These courses are designed to give a thorough and practical preparation for the professions most in demand in Wyoming.

The School of Commerce offers a four years' course in commercial methods and practice. The four years' course includes, also, a thorough preparation for the freshman class of the College of Liberal Arts.

The School of Music offers a seven years' course in piano and vocal training.

The Summer School offers courses running for six weeks in preparatory, collegiate and normal studies. The work is adapted especially for teachers.

The University is founded and maintained for the purpose of being as useful as possible to the people of Wyoming. A university has a double duty. It is to advance human knowledge and to teach that which is already known. The University of Wyoming, therefore, devotes its attention not only to the study of problems of general interest and theoretical importance, but especially to the solution of those practical problems which confront the people of this new and undeveloped state. A state university, too, cannot confine its teachings to the students within its halls, but must endeavor as far as possible to supply to those who ask for it impartial and reliable information on any of the problems which confront the people of this new and undeveloped state.

Besides the instruction of students in residence, the University is able to extend its educational advantages to a considerable extent to the people of the state generally, both by

lectures and correspondence. It should be understood that the library, museums and laboratories of the University are for the benefit of everybody in the state; and as far as the time of the members of the faculty permits, they are willing to give help in such ways as advice in the choice of books, arranging courses of private reading and study, naming plants, minerals and insects, and giving information on the natural resources of the state and how to use them.

Buildings.—The first building to be erected on the campus was the Liberal Arts building. It is 150 feet in length and 50 feet in breadth, having three stories and a commodious garret and store room, above the basement. The material used in its construction is native sandstone. The rooms, twenty-eight in number, as well as all the corridors, are heated by steam and lighted by electricity. The auditorium in the second story is the finest assembly hall in the state, and will seat with comfort four hundred people.

A second building, costing \$12,000, with a commodious wing, was completed in the spring of 1893 for the College of Mechanical Engineering. Another large wing was added in the summer of 1897. The Mechanical building is constructed of the same material as the Liberal Arts building, and contains twelve rooms. The new wing of the Mechanical building has been fitted up for the use of the School of Mines. About \$12,000 has already been spent in equipping the building with tools and machinery.

A third building, known as the Hall of Science, was completed in 1903. The building has been so planned that wings may be added as more room shall be needed. The portion of the building already constructed is 50x80 feet, with a two-story extension on the rear, and cost \$39,000. In this building are located the University Museum, rich in fossils, especially of the Jurassic period: the Rocky Mountain Herbarium, containing about 50,000 specimens, and the laboratories of biology, geology and chemistry.

The Armory and Gymnasium was erected in 1903 at a cost of \$15,000. It is a brick structure, with stone trimmings. The entire floor, covering a space of 45x90 feet, is available for company drill and team work. A running track is suspended from the ceiling. The basement of the building, consisting of five rooms, is fitted up for office, bath rooms and armory.

Equipment.—Since the founding of the institution more than \$100,000 has been expended for apparatus in the different scientific departments. The museum has a large and valuable collection of fossils. The herbarium contains the largest col-

lection of Rocky Mountain flora in existence. The shops are well equipped for woodwork, ironwork, founding and forging. In the assaying department students have the use of three single and one double furnace, a steam rock breaker, a hand crusher, sampling mill, six pulp and three button balances. The University Library contains 18,000 well selected books, besides a large number of pamphlets.

Original Research.—The Wyoming Experiment Station is the department of research of the College of Agriculture of the University. The results of its experiments are published in bulletins, which are sent free on request to residents of the state. Some of the sixty-five bulletins thus far published are: Potatoes, Fruit Growing in Wyoming, Cultivated Shade and Forest Trees, Some Native Forage Plants for Alkali Soils, Alfalfa as a Hay Crop, Wyoming Sugar Beets, Lamb Feeding Experiments, Alkali, Wheat Culture. At present the station is carrying on extended experiments in stock feeding, both in the chemical analysis of forage plants and in the digestion of selected rations.

The School of Mines has issued twelve bulletins on the oil and mineral resources of the state.

The Professor of Chemistry at the University is also State Chemist. Experiments to detect food adulteration are constantly in progress in the laboratories. A number of bulletins have been published on this subject.

Settlers new to the country will find in these university publications information, especially as to crops and methods of developing our resources, which may save thousands of dollars and years of work in fruitless experiments.

The Support of the University.—The University is supported by both federal and state aid. The federal aid consists of the Morrill grant of 1862 for the endowment of Colleges of Agriculture and Mechanical Arts, and the Hatch fund of 1887, for the support of studies pertaining to agriculture and the mechanical arts. The state aid consists of the $\frac{3}{8}$ -mill annual tax on the property valuation of the state, besides special legislative appropriations. There is also a small income from University lands.

Frederick Monroe Tisdell, Ph. D., is President of the University.

The Climate and Its Benefits.

Mountain Ranges.—Nine-tenths of Wyoming lies within the Rocky Mountain region. Strictly speaking, the whole

state is a region of vast plains, relieved by broken and detached ranges and mountain spurs. In the eastern part of the state we encounter the Laramie Range, which extends northwesterly for 200 miles.

Proceeding westward, after traversing the southern portion of the Laramie Plains, we come to the Medicine Bow Mountains. Crossing the Platte River, which, with its tributaries, occupies a breadth of fifteen to twenty-five miles, we come to the main chain of the Rocky Mountains, in a broken series of ranges extending through the state. From the western base of the Laramie Range, after crossing the Laramie Plains, nearly 100 miles in width, an east and west range of mountains is found, which constitute the southern front of the Sweetwater Valley. This wall bears several names, to-wit: Sweetwater, Seminoe and Ferris Mountains, ranges about five to twelve miles in width, and in length almost eighty miles. West of these lies the Green River Valley, sixty to seventy miles across.

Returning to the eastern boundary, we find the Black Hills extending to the northern boundary of the state, where they come in contact with the Little Missouri and Wolf Mountains, whose high and picturesque heads occupy much of the northeastern corner of the state.

Passing over the beautiful valley of the Powder River and its tributaries, towards the west, we come to the magnificent Big Horn Range, fifty miles in breadth, extending 150 miles in Wyoming. Beyond flows the Big Horn River, watering a basin fifty to one hundred miles in width. Still beyond, in a southwesterly direction, are found the Owl Creek, Rattlesnake and Wind River Mountains, the last named being the most extensive, with a direction corresponding to that of the Rocky Mountains. In fact, they form a part of this great chain, and, extending for a distance of 200 miles from the point of departure from the Sweetwater Range, finally end in the Yellowstone National Park.

Still west of this range lie the upper basins of the Green and Snake Rivers, the two being separated by short spurs, known as the Gros Ventre and Wyoming Mountains, connecting the Wind River with the Wasatch referred to as contributing, for about 100 miles, to the western wall of the state.

From the general description of the position, extent and course of mountain ranges, widely distributed over the state, it will be seen that large areas of valley and plain must exist.

General.—There is no region of equal area that is possessed of more abounding and diversified richness of resources and possibility. It is almost as limitless in undeveloped op-

portunities as it was when Bonneville first broke his way into Jackson Hole—now the wonderland of the United States.

Medical Authorities.

“In selecting a climate, the question of degree of temperature is a minor one. A dry, equable temperature is always preferable. Dry cold is not dangerous, and is, indeed, preferable to enervating warmth.” (Wood and Fitz, Practice of Medicine.)

George Burney, M. D., says: “In selecting a climate for a consumptive, the first question which occurs to us is the inquiry as to the proportion of sunny days in which outdoor exercise can be safely enjoyed. In the great majority of cases a dry climate, with abundant sunshine and pure air, constitutes the desideratum.”

Dr. Weber says: “Setting aside individual peculiarities, the majority of tubercular patients do best at a height of three to six thousand feet.”

Dr. Knight of Boston says: “In suitable cases (those in which large cavities are not formed in the lungs) the improvement in nutritive activity is much more marked in mountainous regions than on the plains,” and that “four to eight thousand feet is the proper altitude.”

The cases that are most favorably impressed here are:

1. Where the apices are early affected.
2. Those without cavities, although advanced and with consolidation.
3. Recent cases whose salient symptom is hemorrhage.
4. A non-progressive cavity is benefited.
5. Remaining consolidation after pleurisy and pneumonia.
6. Chronic laryngeal also no worse here than elsewhere.

Cure for Special Maladies.—If one were called upon to select a climate calculated to benefit a patient suffering from a particular malady, it would seem the most rational to select one where that particular disease or class of diseases did not prevail, and as endemic phthisis has never been known to generate in Wyoming, no stronger argument could be advanced in favor of this being a curative climate.

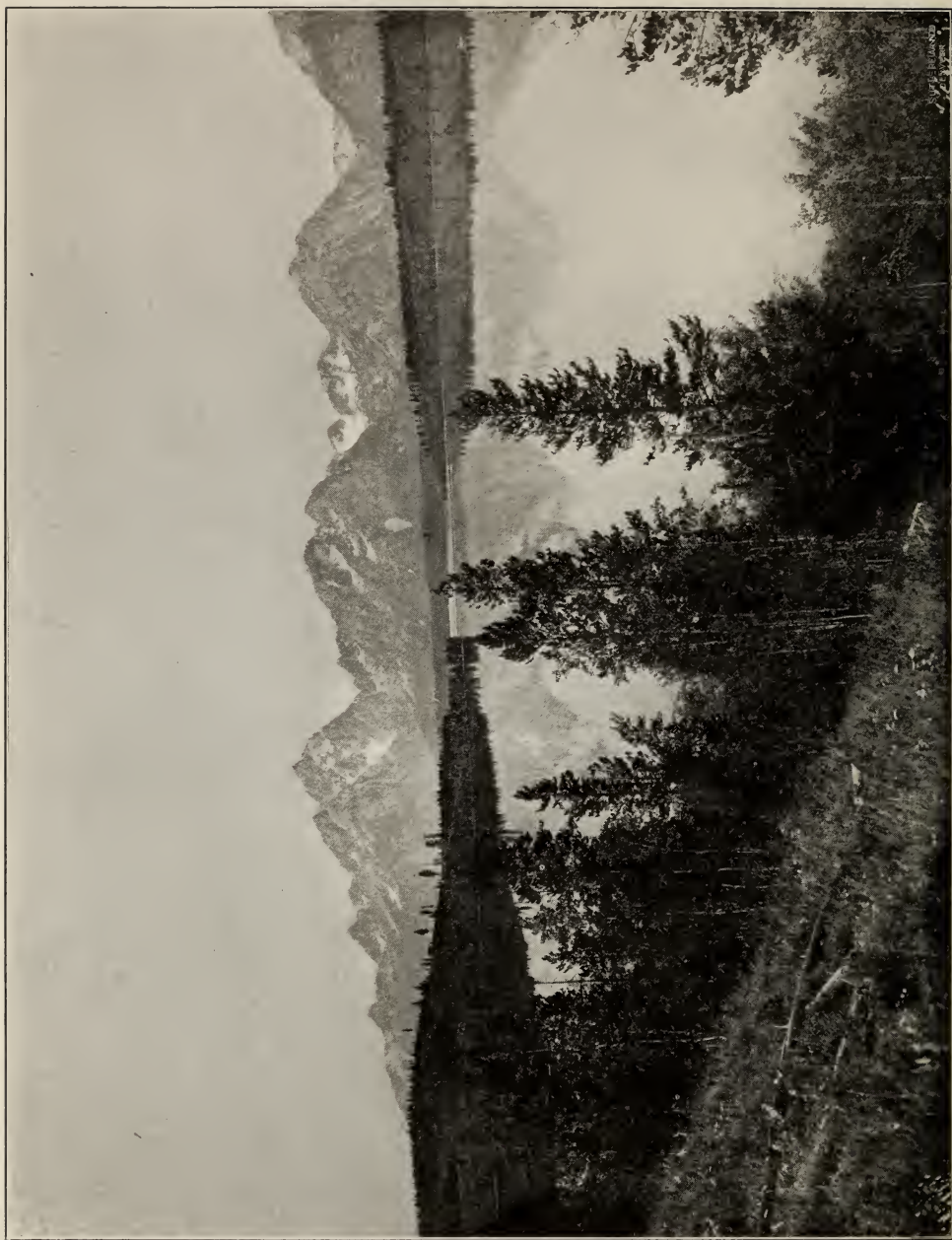
Resorts of any desirable elevation are within reach. Wyoming presents climatic influences equally favorable for the restoring of those invalidated by bronchial maladies and catarrhal states of the throat and naso-pulmonary air-passages as it presents for the alleviation and cure of tuberculosis.

This is the region, par excellence, for asthmatic people. Many hundreds of people of all ages thus afflicted have come here from the low altitudes of the east and west, have been



CANON OF SHOSHONE, SIX MILES WEST OF CODY.

JACKSON LAKE
AND THE
TETONS, FROM A
POINT
NEAR THE OUTLET
OF THE LAKE.



restored to health and vigor, and today are among the most active and prosperous of our citizens.

Our altitude does not militate even against those who have valvular disease of the heart, unless where compensation is destroyed, and accompanied by dilation and weakness.

Chronic laryngitis and bronchitis are speedily cured by residence, unless they exist as complications of advanced stages of consumption. Persons whose habits of life do not allow or compel them to fully expand their lungs in a pure atmosphere; pale, anaemic clerks, those of sedentary habits, with hacking coughs; nervous and dyspeptic people; children with narrow, stooping shoulders and flat breasts, with impaired digestion, should come to these mountains, if possible, as the air of this region necessitates full breathing; every cell in the lungs is forced into activity, straightening the form, increasing the breathing area, and hurrying the blood, thus purified, freely through the lungs. The choice of climate for the patient is the most important part of the treatment.

Climatology—Record for Five Years.

Temperature.—The mean temperature averaged 41.7 degrees. August was the warmest month, with a mean of 67.4 degrees, and December was the coldest, with a mean of 17.4 degrees. The highest monthly mean was 73.4 degrees for July, and the lowest was 5.8 degrees for December. The highest temperature was 105 degrees, during July and August, and the lowest was 30 degrees below zero, during December, an extreme range for the state of 135 degrees.

Precipitation.—The yearly precipitation was 12.58 inches, slightly below the normal. May was the month of greatest precipitation, when nearly twice the normal occurred. September was the driest month of the year, the average being that of 0.25 of an inch, or about one-fourth of the normal. The average was above the normal the remainder of the year.

Weather.—The percentages of clear, partly cloudy and cloudy days were 50, 32 and 18, respectively. There was an average of sixty-seven days on which 0.01 of an inch or more precipitation fell. Foggy weather in the state was not usual, as at Lander dense fog did not prevail for an hour at any time during the year, and at Cheyenne but twice. The percentage of sunshine at Cheyenne was 69, being least in May, 43, and greatest in September, 77.

Climatic Conditions.—The heat is never intense. In the hottest summer weather it is but a step from the heat of the sunshine into the shade, which is always cool. Sunstroke is unknown. The air in winter is clear and sharp, but easily

borne and even pleasant. All over the state—except at high altitudes—one may, even in midwinter, sit in comfort in the sunshine in any sheltered corner. In the shade there is the tingle of northern cold, and heavy clothing is none too warm. The tonic effect of this climate upon nutrition is from this coolness the more marked. It is the brilliant and continuous sunshine which is much praised by mountain residents, and which is misunderstood to refer to air. The invalid who comes to Wyoming for a winter is not coming to a climate of balmy warmth, but, rather, and better, to one where the bracing cold is flooded for more than three-fourths of the day with bright sunshine.

Vacation Resort for Tourists and Hunters.—There is no better district in the Rocky Mountains for a holiday or camping tour than in Wyoming. The stillness of the mountain soothes and quiets those who have become mentally exhausted from prolonged strain and anxious cares or absorbing occupations. Its summer is cool, and in the higher parks the nights are cold. Autumn is an unbroken stretch of cool and sunshiny days. Game and fish are abundant. The railroads carry one to within a short ride, by horse or wagon, through yet unbroken wilderness. From June to October is the season for roughing it. With restoration to health, Wyoming does not say, "Now return to your home," but, rather, welcomes the restored invalid and holds out to him many inducements to remain.

Such, briefly sketched, is this mountain empire—vast in extent, presenting the most picturesque scenery, the greatest charm of climate, the riches of forest, stream and mine, a treasure house of untold wealth, whose unlimited possibilities and incalculable resources, together with the bluest and gentlest of heavens bending above, invite the sick and well alike to come and partake of the free offering, and remain, a valued addition to our population. The climate is one of the richest endowments of Wyoming. It is exhilarating; cheers and braces each individual, lending character to our civil and industrial life, and imparting to our citizens a robustness of physique unequaled in any country in the entire world.

Hunting and Fishing.

The stringent laws for the protection of fish and game enforced in Wyoming during the past ten years have made Jackson Hole the greatest big game hunting ground in the world. Five thousand elk were seen there last fall in one day. Lying

as it does south of the Yellowstone Park, it has been a safe retreat for large game for a number of years, and has gradually filled up with the game driven from other states. Sportsmen may leave the Union Pacific at any point in the western part of the state and outfit for the Jackson Hole country. Parties can secure outfits at Cody and find competent guides who will take them through the beautiful scenery of the National Park, Yellowstone Forest Reserve and Jackson Hole.

To those who have seen some of the thousands of elk and deer gathered in Jackson Hole, it is not necessary to make any explanation; others must satisfy themselves.

In order to hunt large game or game birds, a hunter must procure license. To an elector of Wyoming, or a soldier or sailor stationed at a Government Post for the year past, a license is issued upon payment of \$2. For a non-resident the fee is \$5 for a gunner's license permitting the hunting of game birds, and \$50 for a hunter's license for the killing of game animals. Non-resident hunters must be accompanied by a licensed guide when hunting game animals.

During the open season licensed parties may kill not to exceed two elk, two deer, two antelope and one mountain sheep between September 15 and November 15, and not more than twelve game birds in any one day. The barter or sale of any part of the animals or birds, above mentioned, or the possession of more than the specified number, is prohibited, under penalty of heavy fine or imprisonment. License must be carried and shown upon request. Game killed by non-resident licensed hunters may be shipped from the state, upon a certificate from a justice of the peace stating that such animals were killed according to law. It is unlawful to sell any part of any wild animal, hides, horns or tusks, or to use dogs for the purpose of coursing or running the animals above mentioned. Taxidermists cannot buy hides, horns or any part of game animals or birds, but mounted birds or stuffed heads and horns of animals lawfully killed may be shipped within or without the state.

Open Season.

Grouse—Laramie, Albany and Carbon Counties, August 1 to October 15.

Grouse—Other counties, September 1 to November 30.

Sage Chickens—August 1 to October 15.

Deer, Elk, Antelope and Mountain Sheep—September 15 to November 15.

Snipe, Plover, Ducks and Geese—September 1 to May 1.

What of the Art of Angling?

Wyoming is a natural home of the trout. Nature planted them in the head waters of the Colorado and Missouri. The

North Platte and its tributaries were neglected, but the state fish hatcheries plant several million trout each year, and now almost every stream in the state furnishes sport for the fisherman.

Tourists coming west through Cheyenne and Denver will find splendid trout fishing on the Big or Little Laramie Rivers, leaving the railroad at Laramie City. A little farther west the fisherman can leave the Union Pacific train at Walcott and drive twenty-three miles to Saratoga, where he may fish in the North Platte River, running through the town, go up stream to some of the ranches which furnish fishermen with accommodations, or fish down stream, as he may prefer. Brook trout weighing five pounds and rainbow trout weighing ten pounds are caught in the Platte near Saratoga. Many hundreds of rainbow trout weighing from two to eight pounds have been caught within the city limits.

Tourists passing through the northern part of the state over the Burlington Route will find excellent fishing near Sheridan, and those taking the Cody Route to the National Park will stop near some of the finest trout streams in the west.

There is no sport like fishing to soothe the over-wrought nerves of the tired and weary professional or business man; the man who is tied to his desk with a burden of care from one week's end to another. With rod and creel and a well-stocked book of flies he may fling earthly cares to the wind and enjoy heavenly bliss in angling for trout. There is nothing like it to restore health of brain and brawn. Many men lose their lives by not regarding the necessity of outdoor recreation.

Picture a scene on one of our streams. The month of August is at hand, and mosquitos and flies have ceased to vex. The day is dark, a little breeze ripples the still places and the big fish are alert for food. Over a steep riffle the water breaks and dashes swiftly into the hole below, swirls, eddies and runs slowly off beneath overhanging willows. An old log is athwart the stream and just above, at the upper end of the eddy, is a still place upon which the angler has set his heart. Full sixty feet of line is necessary to hide the artist from his wary prey. It is swinging in air. The cast is made and the line goes true, the tail fly lighting squarely upon the gauged spot. As swift as a flash of light a mighty rainbow leaps from his lair, an involuntary motion of the angler's wrist drives the steel barb home and the struggle is on. He is high in air. Note his beauty and magnificence. From gill to tail his iridescent colors flash back the light. But it is only a look. He is back in the water and away, spinning the reel for full seventy-five feet of line despite the "drag." Again he leaps and the great test of

the expert's skill is here made, for the line may be slacked by the sudden stoppage of the mad race, and slack line means loss of trout. His rapid movement while above the water appears as though he would free himself by a terrific shake, but it is simply the movement he would make were he in the water below. Now down again and back and forth he dashes across the stream; then with the speed of the wind he rushes full toward the fisherman, who must be expert indeed if he takes up the line as fast as he approaches. At the upper end of the pool he stops, a few struggles are made, and he is reeled to the shore and gently drawn upon the sandy beach. He weighs four pounds. What a beauty! How often is the story repeated.

State Fair at Douglas.

For the purpose of advancing the material development of Wyoming, the Wyoming Industrial Convention was organized in 1901. This convention consisted of about five hundred delegates, and its meetings were held in different cities. The first meeting was held in the City of Laramie, the second at Cheyenne, the third at Sheridan and the fourth at Casper. At the Casper meeting it was decided to go to the Legislature with a recommendation for a permanent state fair, and that body passed an act selecting the town of Douglas as the location and appropriating \$10,000 toward the enterprise.

Douglas has entered heartily into the matter and the first state fair will be held in that city on Tuesday, Wednesday, Thursday and Friday, October 3, 4, 5 and 6. More than six thousand dollars will be offered in premiums on agricultural products, live stock and mineral exhibits. The buildings will cost about eight thousand dollars, and it is anticipated that the first Wyoming state fair will be well worth the time and money required in making a journey to Douglas, no matter what your location on the continent may be.

Those who desire information in relation to the state fair should address Hon. James M. Wilson, President, or Hon. M. R. Collins, Secretary, Douglas, Wyo.

Frontier Celebration at Cheyenne.

Condensed History of the Mammoth Show.

This year, September 2, 4 and 5, Cheyenne will give its Ninth Annual Frontier Celebration, which is probably one of

the most thrilling and interesting shows that has ever been enacted in any country. Although it started in a small way nine years ago, it has not only achieved a national reputation, but many come from the old world to witness it each year.

It requires the entire time and undivided attention of the managing board for several months to arrange the many details for this big celebration. More than one thousand persons will take part in the program this year. The best riders and ropers, and the most expert and skillful cowboy and lady riders come from all over the world to compete for the honor of winning the championship prizes offered on this occasion.

Many cities have tried to imitate this show, but it is safe to say that there is no place in the world where it can be given as it is at Cheyenne. They have the wild horses and cattle, and the best riders and ropers here assembled on the vast ranges in the Rocky Mountain region of which Cheyenne is the central point. Cheyenne is the only city that has the material at hand to give such a celebration, and this year thousands of people will come from all over the United States and many from Europe to witness the unique and exciting program of frontier sports.

President Roosevelt, with his party, made a longer stay in Cheyenne than in any other city that he visited, in order to witness a short program of frontier sports that had been hastily arranged, but which was so interesting and unique that he said it was the most enjoyable feature of his entire trip.

When the idea was first originated of giving an annual celebration to perpetuate frontier scenes and re-enact the thrilling experiences of western life, it was started at Cheyenne in a very small way, and it has met with an overwhelming success from the very start, and today it is conceded to be by far the most popular and the biggest celebration of any kind held in the west.

The cost of holding the celebration this year will exceed \$12,000, and it is estimated that more than 25,000 people will attend. Although several months in advance, more than 1,000 reservations for seats from New England cities and Boston have already been made, and all the special trains carrying members of the Grand Army of the Republic to the National Encampment at Denver have arranged to stop at least one day in Cheyenne to attend this celebration.

The Frontier Association has purchased attractive and well equipped fair grounds adjoining the city and has made a great many improvements in the past few years, and will greatly increase the seating capacity of its grandstand this year.

The celebration is a public enterprise and one of incalculable benefit to the citizens of Cheyenne. It has always received the hearty support of all Wyoming citizens and it is an event each year that they take great pride in participating in.

Applications have already been made from all over the western country, from the Canadian border to Texas, for entries by the cowboys and others who make up the performers on this occasion, and there is no doubt that there will be a much greater number of competitors to contest for the prizes this year than ever before in the history of the show. It is also expected that a band of over three hundred Indians will be brought to Cheyenne from the reservation to join in the festivities.

Wyoming at the Louisiana Purchase Exposition.

Wyoming does not ask the people of the earth to take her word for it, but is willing to show them—even in Missouri. When that great exposition known as the Louisiana Purchase Exposition was held in the City of St. Louis, an able commission represented Wyoming there, and they exhibited products of her soil and mines, with the result that many grand prizes, gold and silver medals, etc., were brought back to cheer the hearts of the people and to make the citizens of other states envious. Following is a partial list of the awards made to Wyoming exhibitors:

Wyoming Experiment Station, Laramie—Collective exhibit of grains, grasses and forage plants, grand prize.

John McFarlane—Brome grass, grand prize.

J. F. Lewis—Collective exhibit of native grasses, forage plants and grain in straw, grand prize.

Wyoming State Commission—Collective exhibit of native grasses, cultivated forage plants and grains, grand prize.

E. W. Allred—Wheat, gold medal.

E. J. Bell—Barley, gold medal.

Charles Buell—Oats, gold medal.

J. M. Carey & Bro.—Oats, rye, spelts and alfalfa, gold medal.

George S. Eyre—Oats, gold medal.

J. A. Fischer—Beans, gold medal.

Charles Ferri—Wheat in straw, gold medal.

- Charles Griffin—Oats, gold medal.
Charles Hyer—Wheat in straw, gold medal.
Wilson McBride—Oats, gold medal.
Moncrief Bros.—Wheat, gold medal.
O. A. Mortenson—Oats, gold medal.
Reick Bros.—Wheat, gold medal.
J. G. Spencer—Alfalfa seed, gold medal.
C. J. Simmons—Oats and wheat in straw, gold medal.
Mrs. C. J. Simmons—Collection of native and cultivated grasses, gold medal.
Wyoming Development Company—Oats, alfalfa seed and wheat, gold medal.
Ed Young—Grains, grasses and forage plants, gold medal.
John Zing—Beans, gold medal.
Wheatland Roller Mill Company—Flour, gold medal.
C. W. Gettys—Wool, gold medal.
F. S. King Bros.—High grade wool, gold medal.
Platte Valley Sheep Company—Range wool, gold medal.
Collective exhibit of Wyoming woods and table manufactured from them by Mr. John H. Gordon, gold medal.
State of Wyoming Collaborator, C. B. Richardson, gold medal.
Wyoming Geological Survey, Cheyenne, Wyo.—Coals and iron ores, gold medal.
Wyoming World's Fair Commission—Crude and refined petroleum, gold medal.
State Geologist of Wyoming—Mineral paint ores, gold medal.
Wyoming Railway and Iron Company—Iron and steel products, gold medal.
Battle Lake Tunnel Site Mining Company—Copper ores, gold medal.
C. A. Guernsey—Mineral paint and iron ore, gold medal.
International Onyx and Marble Company—Onyx, gold medal.
Laramie Mining Exchange, Albert Richards—Ore collection, gold medal.
In addition to the foregoing, a large number of silver and bronze medals were awarded to Wyoming exhibitors.
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Railroads and Stage Routes.

Tourists passing through Wyoming on the transcontinental railroads see little of the agricultural portion of the state, as the railroads for the most part run on the divides



FRONTIER SHOW AT CHEYENNE.



A TYPICAL SCENE IN THE BIG GAME COUNTRY.

between water courses, while the farming settlements and irrigated lands, as in all semi-arid regions, are in the valleys of the rivers and creeks. The Union Pacific runs across the southern portion of the state for 468.97 miles, connecting at Green River with the Oregon Short Line for Oregon and the Northern Pacific country. The Colorado and Southern has a line running from Cheyenne to Orin Junction, 153.68 miles, connecting with the Chicago and Northwestern branch, running from Crawford to Casper, with a trackage of 130.43 miles in Wyoming. The Burlington Route has four branch lines entering the state—twenty-nine miles of the Cheyenne and Holdredge line; 236.59 miles of the main line from Lincoln, Neb., to Billings, Mont., running through Newcastle and Sheridan, connecting at Toluca, Mont., with the branch line to Cody, Wyo., a distance of 129 miles (44.61 in Wyoming), and by which all points in the Big Horn Basin may be reached; and 41.32 miles of the line from Alliance up the Platte River to Guernsey, Wyo. The Colorado and Wyoming ore road, 14.55 miles long, connects the Colorado Southern and Burlington roads with the iron mines at Sunrise. An extension of the Northwestern system from Casper to the Indian Reservation and north to Thermopolis Hot Springs, and a branch of the Burlington Route from Garland to Thermopolis and to the reservation are promised by June 1, 1906.

There is a coal road, 6.6 miles of which is in Wyoming, from Belle Fourche to Aladdin, and another nineteen miles long from Diamondville to Spring Valley.

Stage lines cover the state thoroughly. Daily stages running from Laramie to North Park, Colorado, carry mail and passengers to points on the Big Laramie River. To reach the Encampment country the best route is from Walcott station, on the Union Pacific railroad, where all trains stop regularly. From this point stages run to Encampment via Saratoga, leaving Walcott regularly at seven o'clock in the morning daily. Extra stages in afternoon. These stages are four and six-horse Concord coaches, in charge of experienced drivers, and run through on schedule time. The distance is twenty-three miles to Saratoga and forty-three to Encampment from Walcott.

From Encampment daily stages leave for Battle, twelve miles; Rambler, fourteen miles, and Dillon, nineteen miles; and connections are made for camps south or near the state line and Pearl, Colorado, about thirty miles.

Livery teams and saddle horses may be had here for different parts of the district not reached by stage. A line runs daily from Laramie, the county seat of Albany County, to Holmes, a distance of forty-five miles, via Centennial.

For Dillon and Rudefeha, where the Ferris-Haggarty mine is located, connections by team may also be made from Rawlins, the county seat of Carbon County, on the Union Pacific railroad, a distance of fifty-two miles, over a good road recently opened up for travel.

From Saratoga the different points in the Elk Mountain vicinity may be reached by team, and also a number of the camps on Spring Creek and Jack Creek.

Freight is brought in mainly over the Walcott-Saratoga-Encampment road and distributed to the various camps throughout the district.

A daily stage and a mail route runs from Rawlins, on the Union Pacific railroad, to Lander, 135 miles, with connections at Meyersville, ninety miles out of Rawlins, for Lewiston, Atlantic and South Pass City, and another mail line from Casper to Lander and Thermopolis.

Lander, the county seat of Fremont County, may also be reached by team, and stage connections there made for Thermopolis and Cody, on the Burlington and Missouri railroad, and to Casper, 150 miles, on the Chicago and Northwestern railroad.

The best method of reaching the South Pass district for a short stay is by team from Rock Springs, as the eighty miles to South Pass may be covered in two days without material inconvenience, and good accommodations had at Washington's ranch, a half-way station.

South Pass has a good hotel, and this may readily be made headquarters while the district is being investigated.

The most direct way into the Sunlight country is from Cody, by way of Hart Mountain, Pat O'Hara Creek, Dead Indian Hill and Sunlight Creek, the road having been built up the latter creek as far as the mouth of Galena Creek. From this road trails for pack animals lead up to Sulphur Creek, up Galena Creek, and thence over and around the mountain to the mines in Hughes Basin and Silver Tip Basin, on the west side of Stinking Water Peak.

The new road just constructed by the United States Government from Cody to the National Park, and which, by the way, is one of the finest and most picturesque roads in the west, runs within twenty miles of Silver Tip Basin, with a good pack trail from the mouth of Jones Creek to the Basin. Two hotels have been constructed on this route and daily stages run over the new scenic road.

Other lines leave Rawlins for Dixon and Baggs and the Snake River, Colorado, country; from Casper to Central Wyoming; Clearmont to Buffalo; Moorcroft to Sundance,

connecting with mail routes; from Sheridan to interior points in Sheridan and Johnson Counties; from Garland to Byron, Cowley and Lovell; from Garland to Basin, from thence to interior towns; from Cody to Meeteetse and Thermopolis; branches from Meeteetse to interior postoffices; Basin to Thermopolis, via Welling and Worland. Stage lines run from Opal to Big Piney, connecting with interior points.

Wyoming Wants.

In reading the history of this northwest, viz.: De la Verendrye's Expedition in 1742; Lewis and Clark Expedition, under authority of Congress, in 1804; Washington Irving's Astoria, 1811; Captain Bonneville's Expedition, 1832, and Coutant's History of Wyoming—in all of which the territory embraced within the limits of Wyoming was the center of the scene of action—one is astonished at the terrible hardships, privations and perils undergone by brave men for the comparatively little wealth to be realized from peltries. Today, surrounded by the best civilization and without hardship, privation or peril, an unlimited and permanent wealth awaits the investor and worker in the following needs of Wyoming:

The Burlington railroad to extend from Guernsey west across the center of the state.

A north and south railway through the center of the state.

A number of short railway spurs or feeders to the present railway lines, for the development of mineral, oil and agricultural resources—which must otherwise remain undeveloped or unprofitable.

With the accomplishment of the above, the following wants would be speedily fulfilled:

Iron foundries and rolling mills. There are mountains of the finest iron ore in the world.

More coal mines. Wyoming is all underlaid with coal.

More capital invested in irrigation systems—ditches and reservoirs.

More practical irrigators.

More farmers who are not afraid to work.

More practical prospectors.

More practical mining men as investors, operators and workers.

More practical oil investors and well drillers.

Beet sugar factories.

Money to loan at 6 and 8 per cent on A No. 1 securities.

A local trust company.

A local fire and life insurance company.

Every city in the state needs a truck garden. There are a hundred opportunities in this line to make a competency.

Five hundred chicken ranches. Eggs sell for 25 to 50 cents per dozen. Chickens sell for 50 to 80 cents each.

Woolen mills—great opportunity.

Flour mills.

Glass factory.

All "knockers" rounded up and colonized on a Pacific island.

Wyoming only needs thorough investigation by capital and workers to become the home of prosperity.

Public Buildings.

The Capitol building at Cheyenne is classical in style and bears a resemblance to the capitol at Washington.

The Wyoming University, located at Laramie, is described under the article on Education.

The state maintains fish hatcheries at Laramie, Saratoga, Sundance, Sheridan and Lander, which hatcheries each year stock the mountain streams with trout of various varieties.

The Penitentiary building is located at Rawlins.

The State Deaf, Dumb and Blind Asylum is located at Cheyenne, but is not in use on account of the small number of such unfortunates.

The Insane Asylum is located at Evanston.

Two General Hospitals are maintained by the state, one at Rock Springs for the southern section of the state, and one at Sheridan for the northern section of the state.

The Soldiers' and Sailors' Home is located at Buffalo, where the state owns 1,270 acres of rich agricultural land and has buildings worth \$100,000.

Wyoming also possesses a Poor Farm, situated at Lander, but, owing to the fact that the state has no poor, the farm has been rented and the proceeds applied to its improvement, so far as necessary, and the remainder allowed to accumulate as a fund for the future, should it ever be needed.

Banks and Interest.

In all the larger towns are located national banks, while in the smaller towns are found banks incorporated under state law. The legal rate of interest is eight per cent, but any rate agreed upon, not exceeding twelve per cent, is valid. The usual bank rate on time deposits is four per cent; the bank loan rate is from ten to twelve per cent.

Following is a summary of the conditions of the banks in Wyoming at the dates indicated:

	January 22 1904	March 28 1904	June 9 1904	September 6 1904	November 10 1904
National Banks. .	\$7,580,240.45	\$7,472,841.48	\$7,919,617.60	\$8,181,840.46	\$9,126,851.69
State Banks . . .	1,703,728.39	1,768,681.87	1,754,878.14	1,929,365.67	2,104,968.69
Private Banks . .	1,249,389.04	1,183,881.85	1,202,896.81	1,242,198.11	1,417,159.73
Total	\$10,533,357.88	\$10,425,405.20	\$10,877,392.55	\$11,353,404.24	\$12,648,970.11

Number of banks: National, 19; state, 15; private, 8.

Taxes and Public Indebtedness.

The wise restrictions in the State Constitution are a sure guarantee that in Wyoming taxation will never be excessive, or the public debt burdensome. It is there provided that for state revenue there shall not be levied to exceed four mills on the dollar of the assessed value of property for all state purposes, except for the payment of the public debt, with interest, and the support of state charitable and educational institutions, and not to exceed twelve mills on the dollar for all county purposes, excepting the county debt. Special school taxes may be authorized by the qualified voters of the several districts.

The state's original bonded indebtedness was \$320,000. This is being reduced as rapidly as possible under the conditions of the bonds, \$80,000 having been paid off during the last four years, leaving now a debt of only \$240,000. Each county in the state is also paying off its bonded indebtedness.

Incorporated cities and towns are limited to eight mills on the dollar, excepting for the payment of their public debt. The state debt is limited to one per cent of the assessed valuation, while two per cent is the limit on counties, cities and towns.

**Statement Showing the Valuation of the Several Counties of
the State for the Year 1904—One-fourth actual Value.**

Albany County	\$4,360,099.86
Big Horn	3,774,424.90
Carbon	5,569,094.33
Converse	2,540,232.45
Crook	2,336,929.28
Fremont	2,089,585.00
Johnson	2,092,425.98
Laramie	6,782,438.32
Natrona	2,035,491.92
Sheridan	3,433,524.15
Sweetwater	4,072,054.91
Uinta	5,747,805.31
Weston	1,862,842.34
Total.	<hr/> \$46,696,948.75

Total Property Assessed in 1904 at One-fourth Actual Value.

Railroad and car companies.	\$ 7,714,668.26
Telegraph and telephone lines.	311,375.45
Lands and improvements.	11,078,694.55
Town lots and improvements.	7,072,966.00
Horses	1,986,085.00
Cattle	7,908,098.00
Mules and asses.	35,672.60
Sheep and goats.	5,211,839.65
Swine	19,475.00
Dogs	1,101.00
Clocks, watches, jewelry, gold and silver plate.	24,591.00
Musical instruments	91,683.00
Capital employed in manufactures and mdse.	2,477,575.02
Carriages and wagons.	439,819.40
Moneys and credits after deducting debts.	450,127.00
Stocks in corporations.	206,768.00
Farming utensils and tools.	366,293.50
Private libraries	23,315.00
Household furniture (\$100 exempt).	112,436.57
Other property not enumerated.	1,164,364.75
Total.	<hr/> \$46,696,948.75

Public Libraries.

Wyoming early made provision for the purchase and exchange of valuable law books and reports. The library is in charge of the State Librarian, under the direction of the Justices of the Supreme Court, and is open during the business hours observed by the public officers at the capitol. The law library contains nearly 8,000 volumes, exclusive of the public laws and documents of the state.

Of the 260,000 acres of land granted by the General Government for state charitable, educational, penal and reformatory institutions, in addition to special land grants for such purposes, 15,000 acres were set aside in 1897 for the maintenance of the law library. At the present time these lands yield an annual income from rents of about \$600, which is used in the purchase of new books.

An act to increase the State Library by adding a miscellaneous collection of standard books was also passed by the Legislature in 1897, and 15,000 acres of land set aside, the income from which is used in the maintenance of a miscellaneous library. The nucleus of such a library, consisting of three thousand volumes, has been purchased and is now available to the citizens of the state. Provision has also been made by the state for the establishment of county libraries, and in many counties such libraries are maintained for the benefit of the residents. Under the auspices of the Wyoming Historical Society have been collected many early books, papers and documents bearing upon the early history of Wyoming, which are open to inspection at the State Library. The collection of Wyoming minerals shown at the World's Fair, with the medals and diplomas awarded, are also upon exhibition at the capitol.

In addition to the foregoing, Carnegie libraries have been constructed or are in course of construction at Cheyenne, Laramie, Evanston and Sheridan, and there are numerous circulating libraries kept up by public subscription.

Elevation of Cities and Mountains.

CITY	ELEVATION IN FEET	CITY	ELEVATION IN FEET
Alcova	6,000	Hanna	6,788
Atlantic City	7,850	Hyattville	4,550
Buffalo	4,600	Jackson Hole	6,820
Basin	3,700	Jackson Lake	6,800
Battle	9,866	Kirwin	9,500
Cambria	5,100	Lander	5,372
Casper	5,101	Laramie	7,153
Carbon	6,821	Lovell	3,700
Cheyenne	6,050	Lusk	5,007
Cheyenne (Capitol)	6,101	Medicine Bow	6,562
Cody	4,900	Meeteetse	5,000
Corbett	4,659	Newcastle	4,319
Douglas	4,816	Otto	4,011
Embar	5,900	Rambler	9,500
Encampment	7,322	Rawlins	6,744
Evanston	6,759	Rock Springs	6,260
Fort Laramie	4,270	Rock Creek	6,704
Fort Steele	6,505	Sherman	8,247
Fort Washakie	5,462	Sheridan	3,738
Fort Yellowstone	6,370	Saratoga	7,000
Four Bear	6,500	Sundance	4,750
Garland	4,183	Thermopolis	4,350
Glendo	4,716	Ten Sleep	4,513
Glenrock	4,900	Tie Siding	7,890
Green River	6,077	Wheatland	4,700

NAME.	MOUNTAIN RANGE	ELEVATION IN FEET
Big Horn		8,000 to 12,000
Bradley Peak	Seminole	9,500
Bridger Peak		11,400
Chimney Rock	Wind River	11,853
Cloud Peak	Big Horn	12,500
Mt. Doane	Yellowstone	10,118
Elk Mountain	Medicine Bow	11,511
Fremont's Peak	Wind River	13,790
Grand Encampment	Park	11,003
Grand Teton	Teton	13,800
Index Peak	Yellowstone	11,740
Laramie Peak	Laramie	11,000
Laramie Range		7,000 to 9,000
Medicine Peak	Park	12,231
Medicine Bow Range		8,000 to 12,000
Mt. Moran	Teton	12,000
Park Range, in Wyoming		11,500
Phlox Mountain	Owl Creek	9,136
Pilot Knob	Yellowstone	11,977
Quien Hornet	Uintah	9,300
Sailor Mountain		10,046
Seminole Mountains (highest)		10,500
Washakie Needles		12,252
Mt. Washburn		10,388
Yount's Peak	Yellowstone	12,250

STATE OFFICERS AND BOARDS APPOINTED BY GOVERNOR

<i>Name.</i>	<i>Office.</i>	<i>Term Expires.</i>	<i>Postoffice.</i>
William E. Mullen...	Attorney General.....	April 1, 1907...	Cheyenne
Clarence T. Johnston.	State Engineer.....	Feb. 18, 1909...	Cheyenne
Prince A. Gatchell...	Adjutant General.....	January, 1907...	Cheyenne
Noah Young	Inspector Coal Mines, District No. 1.....	Feb. 20, 1907...	Cheyenne
A. E. Bradbury.....	Inspector Coal Mines, District No. 2.....	Feb. 20, 1907....	Evanston
D. C. Nowlin.....	State Game Warden.....	Feb. 20, 1907.....	Lander
H. B. Henderson.....	State Examiner.....	Feb. 21, 1907...	Cheyenne
Mrs. Clara Bond.....	State Librarian.....	April 1, 1907...	Cheyenne
Henry C. Beeler.....	State Geologist.....	Feb. 21, 1909...	Cheyenne
G. T. Seabury.....	State Veterinarian.....	Feb. 18, 1907...	Cheyenne
Samuel H. Campbell.	Supt. Fish Hatcheries, District No. 1.....	Feb. 18, 1907....	Laramie
C. W. Morgareidge...	Supt. Fish Hatcheries, District No. 2.....	Feb. 18, 1907....	Sheridan
Ed W. Burke.....	Food and Oil Commis'r.	March 31, 1907.	Evanston

BOARD OF LIVE STOCK COMMISSIONERS.

Ora Haley.....	Term expires Feb. 18, 1907.....	Laramie
Alexander Bowie.....	Term expires Feb. 18, 1907.....	Chugwater
A. A. Spaugh.....	Term expires Feb. 18, 1907.....	Manville
Thomas Durbin.....	Secretary	Cheyenne

STATE BOARD OF SHEEP COMMISSIONERS.

Jacob Delfelder.....	Term expires Feb. 18, 1907.....	Lander
Timothy Kinney.....	Term expires Feb. 18, 1907.....	Rock Springs
J. M. Wilson.....	Term expires Feb. 18, 1907.....	Douglas
George S. Walker.....	Secretary	Cheyenne

COMMISSIONERS OF PHARMACY.

W. H. Edelman.....	Term expires March 31, 1907.....	Sheridan
Fred W. Roedel.....	Term expires Feb. 16, 1909.....	Cheyenne
Frank H. Eggleston....	Term expires Feb. 18, 1909.....	Laramie

STATE BOARD OF HEALTH.

Amos W. Barber, Sec...	Term expires Feb. 18, 1909.....	Cheyenne
J. L. Wicks.....	Term expires Feb. 16, 1909.....	Evanston
F. Horton.....	Term expires Feb. 16, 1907.....	Newcastle

STATE BOARD OF MEDICAL EXAMINERS.

E. P. Rohrbaugh, Pres...	Term expires Feb. 17, 1907.....	Casper
S. B. Miller, Secretary...	Term expires Feb. 17, 1907.....	Laramie
Oliver Chambers.....	Term expires Feb. 17, 1907.....	Rock Springs

BOARD OF CONTROL.

(Superintendents' terms expire February 18, 1907.)

Clarence T. Johnston....	(State Engineer, ex-officio).....	Cheyenne
Pitt Covert	Supt. Water Division No. 1.....	Cheyenne
Frank H. Stotts.....	Supt. Water Division No. 2.....	Sheridan
Lou Blakesley	Supt. Water Division No. 3.....	Otto
Walter B. Dunton.....	Supt. Water Division No. 4.....	Rock Springs
	H. L. Pascall, Secretary	

LEWIS AND CLARK EXPOSITION COMMISSIONERS.

B. B. Brooks, President (ex-officio).....	Cheyenne
W. C. Deming, Secretary.....	Cheyenne
C. B. Richardson, Commissioner in Chief.....	Cheyenne
J. L. Baird.....	Newcastle
George E. Pexton.....	Evanston
B. C. Buffum.....	Laramie

BOARD OF DENTAL EXAMINERS.

Dr. William Frackelton (four years).....	Sheridan
Dr. Peter Appel (four years).....	Cheyenne
Dr. W. C. Cunningham (two years).....	Evanston

